Food Manufacture

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Irradiated Foods.

ONE OF the most recent developments in food manufacture is the process of irradiating foodstuffs to improve their antirachitic properties. Most of our common foodstuffs are capable of being activated, and it has been shown that this is largely dependent on their content of ergosterol. This relatively rare sterol occurs in grains, yeasts, moulds, etc., but it is entirely inactive. When exposed to ultra-violet light irradiation it becomes active, presumably on account of an intramolecular rearrangement in the ergosterol molecule, such as the movement of a double bond. In America, where cereal breakfast foods are very popular, the use of ultra-violet irradiation is increasing rapidly. It has been suggested that the potency of irradiated foods is so low as to be practically negligible, but it must be remembered that irradiated foods are not meant to replace cod liver oil or viosterol, which are medicinal foods. They are merely intended to make the most use of the sterols they contain. The vitamin D content of eggs and milk varies considerably according to the diet of the hens and cows. It is well known that milk from cows on pasture in the sunshine is richer in vitamin D than that from cows in shippon on a winter ration. It is clear that the potency of irradiated cereal foods compares favourably with that of milk and eggs when these are at their best. It is not necessary or even desirable that breakfast foods should be compared with cod liver oil any more than eggs, milk, and vegetables should be compared with it. On account of the quantities consumed, these irradiated foods will appreciably augment the antirachitic properties of the ordinary diet, which in most cases includes neither cod liver oil nor viosterol. It is stated that the antirachitic potency of irradiated foods is highly stable to ordinary storage and household cooking, but is subject to destruction at some of the higher temperatures existing in commercial baking. The process of irradiating foods is relatively a simple matter—the material being merely circulated on an endless band under a battery of mercury vapour or carbon arc lamps. Unfortunately, as yet, there are no satisfactory quantitative chemical tests for measuring vitamin D, and recourse has to be taken to biological tests, which are slow and introduce many undesirable variables. If a simple satisfactory test could be worked out the problem would be much less difficult.

Denatured Alcohol.

A correspondent has written to us "pointing out an inaccuracy under Denatured Alcohol Danger on page 313 of your November issue." He goes on to say that we are under a misapprehension in condemning the use of denatured alcohol, and informs us that "the expression denatured alcohol is pure alcohol to which a denaturant, in accordance with the wishes of His Majesty's Customs and Excise, have been added." Precisely so! In these Editorial remarks we pointed out a serious outbreak of paralysis which had occurred through drinking Jamaica ginger wine, which contained the phosphoric ester of tricresol, which presumably had been used as one of these denaturants. We are amused at our correspondent's ingenuousness in describing denatured alcohol as "pure alcohol" to which a denaturant had been added. Why was the denaturant added, and what constitutes a denaturant? Is a substance pure when it has had something objectionable added to it to make it unfit for human consumption? Denaturants are certainly added in accordance with the wishes of His Majesty's Customs and Excise, but with the definite and specific purpose of rendering the alcohol unfit for drinking. An ardent prohibitionist might add strychnine to whisky to prevent it being fit for consumption, but we hardly feel that our correspondent would be inclined to drink it, even though it were labelled "Pure whisky to which strychnine has been added in accordance with . . ." No, our

correspondent himself seems to be under the misapprehension as to the meaning of denaturant. Pyridine and other obnoxious substances are added with the definite purpose of rendering alcohol unfit for human consumption. Furthermore, a manufacturer is prohibited by law from removing such denaturants and distilling over a purified alcohol. Every first year student of chemistry knows that by refluxing with caustic soda and distilling over lime a fairly pure alcohol is obtained from methylated spirits, but any manufacturer trying this would soon get into trouble. The use of denatured alcohol in foodstuffs is entirely wrong, and is a practice which should certainly be avoided, and we have no doubt is avoided, by all discriminating food manufacturers.

Wheat Supplies.

In his Presidential Address to the British Association in 1898 Sir William Crookes took to himself the mantle of prophecy. He said: "Should all the wheat growing countries add to their area to the utmost capacity, on the most careful calculation the yield would give us only an addition of some 100 million acres, supplying, at the average world yield of 12·7 bushels to the acre, 1,270 million bushels, just enough to supply the increase of population among bread eaters till the year 1931."

The year 1931 has now dawned, and the position is far different from Sir William Crookes' forecast. Mr. Broomhall, the eminent authority on wheat statistics, estimates that at the end of July, 1931, there will be a surplus of over 60 million quarters of wheat available. To what can we attribute this difference from the carefully calculated forecast? Many changes have taken place since 1898, notably in the discoveries of vast supplies of phosphates and the production of synthetic fertilisers. Progress has been made in the development of agricultural machinery; tractors and harvesters now cover enormous areas rapidly, and the wastage previously experienced during harvest when the crop had to be man-handled has been reduced. Now it is possible to harvest a big crop very rapidly when favourable conditions arrive. The farmer, therefore, grows more, knowing that his harvest is not so much at the mercy of the elements as it was formerly. Irrigation, too, has done much to bring desert areas into the cultivated zone.

New Factors.

Australia was a negligible factor in the world's wheat supply in 1898—now she is a big producer. The increase in production in Canada has been amazing—an increase no one in 1898 could ever foresee. Even since 1914 the expansion is surprising. In the prairie lands of Canada the production of 140 million bushels had become 395 millions in 1925! According to Swanson and Armstrong, the total crop of 235 million bushels in 1924-1925 had become 511 millions in 1928-1929. Increased production, more scientific handling, more economical marketing, together with improved milling methods, have played their part in upsetting Sir William Crookes' calculations. Another factor has been the great increase in commercial baking as opposed to home baking, and the development of the commercial loaf, which, if not so palatable, is more filling than the homemade loaf. Finally, there has been a *per capita* decrease in the consumption of bread due to a number of factors. The increasing substitution of mechanical methods for man-power is resulting in a decreased demand for energy. Many of the calories expended in manual labour are now supplied by petrol and oil, so that man's intake of calorie-supplying foods is necessarily lessened.

It is quite likely that wheat will long remain to be "the most sustaining food grain of the great Caucasian race"—to borrow Sir William Crookes' phrase. It will probably extend into many other lands on account of its increased production and lower prices. Sir William pleaded for science to come to the rescue to avoid a wheat famine in 1931—we think that science in many ways has responded to that exhortation. At any rate the famine is a long way off.

The Gas Storage of Fruit.

The effect of CO_2 on the storage of fruit, vegetables, and flowers is the subject of an interesting study by N. C. Thornton (*Ind. Eng. Chem.*, 1930, p. 1186). Pears become soft and juicy, while bananas (in 33 per cent. CO_2 atmosphere) remain firm, and in both cases the astringent flavour is removed. Citrus fruits will tolerate a high concentration of CO_2, and grapefruit develops a bitter flavour in CO_2 concentrations above 50 per cent. Oranges also develop this bitter flavour at 64 per cent. concentration, and at the same time hesperidin crystals are deposited on the outer membrane of the carpel walls. With vegetables, injurious concentrations of the gas result in the formation of dark bruise-like areas which quickly rot on exposure to air. The susceptibility of vegetables to CO_2 appears to be governed by the amount of water on the surface of the material, for dry surface vegetables were found to be more tolerant than the wet. The storage of flowers in CO_2 results in retardation of bud development, but, here again, tolerance to the gas varies with different types. From the practical point of view, the improvement in the flavour of the pear is an important consideration, while a 5 per cent. concentration of CO_2 prolongs the life of many flowers, if they are cut while in bud, so that the subject seems one which would merit further research. The author

gives a table showing the non-injurious and injurious concentrations of CO_2 at different temperatures for a number of fruits, vegetables, and flowers.

Milk Testing.

The Dutch method of detecting milk adulteration by determination of its freezing-point is now coming into use in the United States and in Germany. Dr. A. van Raalte states that all public analysts in Holland agree that normal mixed milk has a freezing-point between −0·54° and −0·57° C. Thus milk with a freezing-point nearer to zero than −0·54° C. is regarded as being adulterated with water. The method is very rapid in skilled hands.

Milk Freezing.

It has, however, been shown by Parker and Spackman that the cryoscopic (or freezing) method only gives accurate results in watered milks when these are in fresh condition. Also, pasteurisation raises the freezing-point 0·01°. These investigators suggest that the normal acidity of fresh milk be taken as 0·14 per cent. of lactic acid, and their experiments indicate a temperature correction factor of 0·003° for each 0·01 per cent. excess acidity for acidities between 0·17 and 0·6 per cent.

According to Andrew's work on New Zealand milks, the freezing-point of normal milk is not above −0·550°. If the freezing-point rises to −0·530°, watering may be suspected, and if to −0·520° it is certain that about 5 per cent. of water has been added.

Casein.

Casein is an important by-product of the dairy industry. According to its source, commercial casein may be described as acid casein, buttermilk casein, or rennet casein. For many purposes casein should be free from impurities, particularly mineral matter and fat. A very large proportion of the total output of casein finds its way into the manufacture of adhesives in the form of glues and sizes. For glue making, ash and fat must be as low as possible, the former tending to induce brittleness and the latter poor spreading qualities. Also, high acidity and the presence of sugars are objectionable.

It is therefore a matter of first importance in the scientific control of casein manufacture to have reliable and rapid methods of estimating such impurities as are likely to occur.

Carob Seed Gum.

The gum from the carob or locust seed (*Ceratonia siliqua*) is now known commercially under a variety of names, and owing to its property of producing viscous gels at low concentration, is used as a sauce thickener. The gum, which is in the form of a cream coloured powder, has the following composition: (Hexosans) galactan, 24·84 per cent.; mannan, 64·39 per cent.; pentosans, 4·07 per cent.; proteins, 2·40 per cent.; cellulose, 1·46 per cent.; and mineral matter, 2·81 per cent.

A ·5 per cent. aqueous solution of the gum is decidedly viscous, while a 5 per cent. solution is almost non-flowing. To prevent difficulties in preparing aqueous solutions, the dry gum should be wetted with alcohol and then added slowly, with heating and stirring, to the water. Alkalis and alkaline salts darken the mucilage, while caustic soda also reduces viscosity. Acidification and boiling result in hydrolysis. A characteristic reaction is with borax, and is suggested as a test for the latter. The solution containing the borate is rendered slightly acid, and heated to expel carbon dioxide, when it is made neutral to phenolphthalein with caustic soda solution, and then alkaline with 2 to 3 drops of 1 per cent. sodium carbonate solution. After evaporation to dryness, the residue is stirred with a drop or so of the gum solution (1·5 per cent.), when in the presence of borax, an irreversible gel is produced. This test is not affected by the presence of phosphates. Further information will be found in *Ind. Eng. Chem. Analy. Edit.*, 1930, p. 329.

New Dryer.

Mr. J. E. Nyrop, of Copenhagen, describes a new form of film dryer for dairy and other products, which consists of a rapidly rotating chamber or pipe in which is led the product to be dried. By means of centrifugal force, the product is spread as a film over the walls of the chamber and hot air is passed through the chamber without itself taking up a rotatory movement (or rotating in the opposite direction). A high velocity between the current and the surface is thereby obtained, and the evaporation takes place in a short time at a very low temperature, although the temperature of the air current may be high.

Empire Canning.

As regards the production of Empire canned foods, this has not shown any great recent expansion. The most effective stimulant is to be found in convincing the average working-class housewife, who is the chief buyer of canned foods, that Empire products are the best. Certainly the public are being slowly educated to consider the origin of canned foods, but very much more requires to be done in this direction. There is no doubt about the ability of the Empire to produce a much larger proportion of the canned goods for its own needs; if production is to be speeded up, a really comprehensive and vigorous publicity campaign will have to be organised and put into action without delay.

Singapore Canned Pineapple Notes.

The more recently erected pineapple canneries in the Straits Settlements are great improvements on the older ones. This is notably the case in regard to a factory in Johore that commenced operations in June, where the machinery and methods of working are far in advance of those generally in vogue in this country, cleanliness throughout the preparation of the preserved article having received special attention.

Consideration is being given to the possibility of the economic growing of pineapples as a permanent crop, and proposals for preliminary experiments have been put forward by the Malayan Department of Agriculture for the consideration of Governments concerned.

Attention continues to be devoted to the possibility of extending the market for Malayan pineapples by suitable displays at exhibitions and trade fairs, organised by the Malayan Information Agency acting in co-operation with the Empire Marketing Board. There is evidence to show that these efforts are meeting with success.

Greek Vinegar.

A new law was recently voted by the Greek Parliament and Senate, and published as Law 4586, setting protective measures in regard to the production and trade of vinegar in Greece. According to the new law, genuine vinegar is considered only that obtained through acetous fermentation of wine made of fresh grapes or dried currants, and containing at least 4·5 per cent acetic acid. The use of acetic acid or other acids for the production of vinegar is strictly prohibited. The importation and sale of artificial vinegar is also prohibited, except of that imported in bottles containing not more than one kilo of liquid.

Portuguese Canned Olives.

The canning season for olives in Portugal is during the months of December and January. Olives used for canning are of two qualities—small black olives which are known by the name of "Douro," and large green olives or "Elvas." Both ripe and green fruit is canned, and it is packed in brine in tins having a gross weight of one, five, or ten kilograms (about 2·2, 11, and 22 pounds). Of this gross weight, about 50 per cent. is represented by the olives themselves, and the other 50 per cent. is accounted for by the tin and the brine. The tins are packed in cases of various sizes containing ten, twenty, thirty, or sixty tins, according to the wishes of the purchaser. There is no standardisation, as in the Portuguese sardine industry. Olives are also packed in brine in barrels weighing thirty, forty, and fifty kilograms (about 66, 88, and 100 pounds).

Extraction of Orange Oil.

According to F. J. de Villiers, *Jour. South Afr. Chem. Inst.*, 1930, xiii., p. 48, the most satisfactory method for the extraction of oil from orange rind was found to be rasping the rinds under alcohol, this resulting in less solution of other substances contained in the inner parts. To separate the oil from the solvent, recourse was made to dilution with water to produce an emulsion in which the oil particles were negatively charged. At this stage, centrifuging removed only part of the oil, and it was found necessary to add suitable electrolytes to neutralise the charge on the oil particles. Divalent calcium was more strongly absorbed than monovalent sodium, and trivalent iron stronger than both. The greatest flocculating power was shown by hydrogen ion. The addition of the electrolyte at a suitable temperature followed by centrifuging resulted in a separation of the oil.

Sandiness in Condensed Milk.

According to B. Segal, *Jour. South Afr. Chem. Inst.*, 1930, p. 33, sandiness in sweetened condensed milk is attributed to supersaturation with respect to lactose. The size of the lactose crystal is important, and is related to the method of cooling. The author shows mathematically that the texture of the condensed milk is a function of the size of the lactose crystal. A formula is given with which the number of lactose crystals per cubic mm. of condensed milk can be calculated. From the manufacturing point of view, it is considered necessary to have a method of cooling in which a large number of crystal nuclei are formed at once rather than the gradual growth of crystals round a small number of crystal nuclei.

Whaling Industry of South Africa.

Cape Town has during the past year become increasingly important as a whaling base. The local industry, which is based upon a few whaling stations scattered up the south-west coast, particularly at Saldanha Bay, has experienced on the whole a fairly good season, although definite figures are not yet available.

In addition to this industry, the port of Cape Town is being made a refitting base for an increasing number of Norwegian whalers and their "mother" ships. The "mother" ships have this year merely called for supplies before return to Europe with their catch, but the whalers themselves are refitting. A considerable degree of activity is being given the port by the repairs and refitting of nearly 100 of these ships, and additional facilities are under consideration at the docks.

Cereal Chemistry in 1930

By T. H. FAIRBROTHER, M.Sc., F.I.C.

The progress of research work carried out during the past year in America and Britain is reviewed and discussed, and the differences in the conditions prevailing in these countries as regards this particular work are emphasised. The article concludes with an extremely interesting discussion of the world wheat situation.

LARGELY ON account of the intense activity of the American Association of Cereal Chemists in the last decade, cereal chemistry is now an accepted branch of applied science. It is strange that the impetus should have come from America—the biggest wheat producer in the world—rather than from England, the biggest buyer of wheat in the world. In almost every industry which has made England great the raw materials are tested with scrupulous and meticulous care—yet paradoxically enough, until very recently, the whole of the raw material for the staple article of diet to feed her teeming millions of workers came in unchallenged and untested. Only very extreme cases of diseased wheat were rejected.

Research in Britain.

Now a small band of cereal chemists in this country—aided very largely by the papers published by American cereal chemists (though these are not all necessarily helpful!)—are carrying out researches on wheat, flour, and bread, and the various treatments involved in flour milling and bread baking. Their work can be regarded in two sections: (*a*) That of a more routine type relating to the examination of wheat and flour, such as the perfection of analytical methods, etc.; (*b*) pure research work, which may or may not have an ultimate commercial value.

Much research work of great value to the milling industry in this country is being carried out at the Research Laboratories of the British Flour Millers' Association at St. Albans. Dr. Fisher, the director, and his staff of chemists and physicists are carrying out important researches, the results of which are communicated to the members of the association. Unfortunately, it is not expedient to publish all their researches, but occasionally papers of general scientific interest, such as the influence of hydrogen ion concentration in the baking process, or rope in bread, etc., are published in the scientific Press. Some idea of their research work on large scale developments may be gleaned from the patents taken out on the physical methods of improving flour. Another laboratory service—of great value to many millers and bakers—is the laboratory of Messrs. Woodlands, Ltd., Dover. There Dr. Kent-Jones, with his team of co-workers, assists millers with problems of grist and conditioning. In addition, they show bakers how to make the best loaf from any rather refractory flour. Recently an arrangement was concluded between Messrs. Woodlands and Novadel, Ltd., with the result that a combined bleaching and improving agent ("Multaglut") in the shape of salox (ammonium persulphate) and novadelox (benzoyl peroxide) has been introduced to the milling industry. The services of the Woodlands' laboratory are placed at the disposal of those millers who use this product. This service is all to the good, as it enables those millers who are unable to run their own laboratories to get the benefit of a first-rate laboratory service. Incidentally, the Woodlands' laboratory is not merely a testing house, it is producing valuable research work, of which in the past year perhaps the most intriguing, if not the most important, are the preliminary studies on the bacteriology of wheat and flour detailed in the *Analyst*, April, 1930.

Analytical Methods.

In regard to newly published work on analytical methods developed by workers in this country, the "Detection and Determination of Small Quantities of Chlorine in Flour," by Kent-Jones and Herd (*J.S.C.I.*, 1930, p. 223T.), describes a new method which is of great value in detecting chlorine bleached flours. The paper by Herd and Amos on the "Estimation of Fat in Wheaten Products" (*Cereal Chemistry*, Vol. 7, p. 251) opens up new and interesting speculations. This work reveals the important fact that direct ether extraction will give a measure of the free fat existing in the product, but that to determine total fat content—*i.e.*, the free fat, plus the combined fat after liberation from its combination—the acid hydrolysis method is necessary. This work indicates that some modification of the accepted methods for evaluating the fat in wheaten products is required. Several methods for the rapid determination of moisture in wheat and flour products have been reviewed by Fairbrother and Wood (*Industrial Chemist*, November, 1930), including a rapid distillation method with carbon tetrachloride, as well as the dielectric constant methods by the Burton Pitt and the Heilan Radio Circuits.

British and American Conditions Compared.

In comparison with the amount of work published in America, the researches made public in this country are ridiculously small, but it should be remembered that in this country there are not very many cereal chemists, and they are attached either to private firms or to the Research Association, which is run for the benefit of its members. Consequently, much of the research work carried out by individual cereal chemists is not published, as it would be giving information to competitors or non-members of the Research Association. In America the position is very different. There are a number of schools of cereal chemistry where research work is carried out by students working for the Ph.D. degree, and their theses are usually published. In addition, there are

the journal series of the various agricultural experiment stations. One looks forward to the further development of schools of cereal chemistry in the Universities in this country, when it would be possible to devote an amount of research to this subject which would be comparable with that devoted to other sections of chemistry.

American Research.

In the United States and Canada many interesting papers have been published during the year, and they have covered an enormous field. Of particular interest was the Report of the Committee of the American Association of Cereal Chemists on "Methods of Testing Cake and Biscuit Flours." Much attention has hitherto been paid to the bread making section of the industry, but the cake, pastry making, and biscuit problems have received scant notice. The report, which is one of the first to deal with this quite important section of the industry, deals with such problems as the method of awarding points to cakes, effect of temperature on dough, methods of incorporating ingredients, methods of mixing, testing soft wheat flours for uses other than cake making, viscosity, water tolerance of soft flour, size and shape of baking pans, and the effect of mixing time. This is a really valuable contribution to a hitherto neglected side of cereal chemistry. Other papers relating to cake making are "The Effect of Variation in Ingredients on Colouring of Chocolate Cake," by Emily Grewe, and "The Effect of Acid Potassium Tartrate as an Ingredient in Angel Cake," by Grewe and Child. On the bread side of the industry, Washington Platt has contributed a very comprehensive thesis on "The Staling of Bread." The work has been on two main lines: the change of swelling power of the crumb in water, and the change of the compressibility of the crumb.

Work on Gluten Proteins.

The protein problem has received its usual share of attention. Larmour has discussed "The Relation between Protein Content and Quality of Wheat as Shown by Different Baking Methods." This was a comprehensive study of 286 samples of pure varieties, mostly marquis, milled in an experimental mill. Davis has made an important contribution to our knowledge of the "Protein Digestion Test," in which he has examined a number of the variables. The effect of severe weathering on the protein and ash contents of wheat and flour has been discussed by Whitcomb and Johnson, whilst Wilkins has contributed a most useful paper on "Sundry Means of Hastening the Determination of Protein of Wheat." The conclusions arrived at were based on 9,575 determinations—truly a monumental work! When we read that the maximum operating rate of 20 protein determinations per man per hour was obtained by use of the procedure and equipment described, and an output of 1,600 determinations was accomplished in an 11½-hour day, we are left rather breathless. Blish has published work on "The Gluten and Non-Gluten Proteins," which goes to support the view, frequently expressed by the writer, that trustworthy and dependable methods for the identification and quantitative separation of individual proteins, other than gliadin, are not available. All that it is possible to do is to demonstrate strong tendencies towards certain types of chemical constitution and properties. Beyond this, the evidence is uncertain and indefinite. De Jong and Klaar, of Utrecht, have made a further contribution to the knowledge of colloid chemistry of gluten. This study is based on viscosimetric considerations. Possibly one of the most interesting papers of the year is that by Brownlee and Bailey on "Proteolysis in Bread Doughs." In this study the authors have come to the conclusion that the chemical structure or degree of aggregation of the gluten proteins is in no way altered during the fermentation of an ordinary bread dough, and that the changes in the physical and colloidal properties of fermenting doughs cannot be due to an actual chemical change, but may be due to a simple dispersion of the colloidal complexes in which the protein molecules are left unaltered chemically. They regard those chemical changes in dough which are frequently attributed to proteolysis as being brought about by the progressive increase in acidity during the fermentation, which increase would bring about a swelling and syneresis of the colloidal gluten particles. In their opinion this would account for the changes in viscosity as fermentation increases. Thus, after a very careful investigation, these workers arrive at the conclusion that the whole of the changes in dough are physical and that no chemical change occurs—in other words, the old terms "ripening" of the dough and "breaking down of the gluten" are meaningless. Whilst one has no hesitation in acknowledging the exhaustive nature of this investigation, one is reluctant to go the whole way with the authors in the conclusions they draw. The actual determination of the relative protease activity taking place in bread doughs is difficult, and very refined methods are not available. Slight modifications of protein structure may be accompanied by relatively big alterations in their colloidal behaviour, and the methods for observing and measuring the latter are more simple than the chemical methods for studying peptisation. We know that there are proteolytic enzymes in flour, and in the doughing process yeast is added, so that there are at least two potential sources of proteolysis, and when one considers that all the conditions in dough making must of necessity be favourable to enzyme action (to allow the zymase to work) it is strange if these proteolytic enzymes do not function at all. The work of Brownlee and Bailey, however, does show that if they do function it is very difficult to prove it by such methods as are at present available.

Work on Yeast.

Cook and Malloch have given useful information on yeast testing, whilst Johnson and Green have recorded their results on the effect of yeast fermentation on the viscosity of flour water suspensions.

Testing Methods.

Many papers have appeared on routine problems, including four on the determination of ash. Useful

apparatus has been described, such as a volume measuring apparatus for small loaves, methods of photography in cereal work, a means for the gasometric determination of CO_2, an automatic proofing device for doughs, a simple apparatus for measuring the compressibility of baked products, amongst many others.

And so the march goes on. New methods, new devices, new ideas are appearing regularly. Fresh brains are being turned on the subject. Information is accumulating at a rapid pace. All this must ultimately result in a more economical utilisation of the world's chief food supply—wheat—and the production of a more wholesome and nutritive loaf, and thus a healthier and wealthier community.

Wheat Production.

A review on cereal chemistry would hardly be complete without some discussion on the world wheat situation. The past year has been particularly interesting, as many types of wheat have appeared on the English market different from the usual run of wheats. Russian wheat has again made its appearance, and by the dumping policy adopted has had an influence on wheat prices. Such samples as the writer has examined have resembled Plate wheat in most characteristics. Karachi (both red and white) has been plentiful and cheap. Other wheats which have found their way to England in greater or less amounts were German, French, Polish, Danubian, and small parcels from Kenya. Wheat is cheaper now than it has been for many years, and a vast surplus is being built up. How this will affect wheat growing in England it is difficult to say. The Canadian farmer, aided by mechanised agriculture and mass production, can afford to sell his wheat cheaper in England than the English farmer can, despite the fact that the yield per acre in England is about double that in Canada. Politicians and economists talk glibly of increasing the acreage under wheat in England, of a compulsory quota or a tax on foreign wheat. The farmers talk fondly of prices in the neighbourhood of fifty shillings a quarter, at the same time that Polish wheat, with nearly all the characteristics of English wheat, goes begging at half that sum! In spite of all this talk the fundamental fact remains that there is a large surplus available, and with the improvements science is effecting in wheat cultivation the world production will go up steadily, and prices should therefore fall. It would be difficult to create an increased demand equivalent to the potential increase in supply. In a very interesting book called *Wheat*, published during the year under review, Swanson and Armstrong suggest the possibility of a billion bushel crop in Canada in another twenty years! Chemistry is assisting in the increased production by the discovery and manufacture of suitable fertilisers, and by attacking the diseases of wheat both by antiseptics and by the breeding of disease-proof varieties. Engineering is also assisting by irrigating desert areas and producing new forms of machinery for ploughing, sowing, reaping, and handling. For many years yet wheat will remain the staple diet of the world, and its production will increase. In the dim and distant future synthetic foods made from the atmosphere may oust the farmer, and all the food may be factory made, but that remote speculation need not worry us. It is not the part of a reviewer to take on the rôle of prophet, and, much as one would like to indulge in prophecy in this direction, we must leave the future of the wheat situation at that—it is distinctly intriguing, and provides a subject for fascinating speculative thought.

Vitamins in Tomato Products

TOMATOES are now widely used as an antiscorbutic, a property which has been found to remain practically unchanged in tinned tomatoes after three years' storage. Green tomatoes acquire full vitamin A potency on ripening, but the ripening, either by air or ethylene, does not produce vitamin C potency equivalent to natural ripening, although, according to Clow, Stevenson, and Marlatt, this might occur. Field ripening produces more vitamin C than glasshouse ripening.

In a further study on the vitamin content of tomatoes, Kohman, Eddy, and Zall (*Ind. Eng. Chem.*, 1930, p. 1015) have examined both raw and canned green and ripened tomatoes. Ripening doubles the vitamin A content, and canning has no effect either with green or ripe tomatoes on this factor. The vitamin B contents of all four types of tomatoes are about the same. Canned green tomatoes are not more potent in vitamin C than raw tomatoes. A number of tomatoes were also tested for vitamin potency, the idea being to determine the effect of ordinary manufacturing processes. It is shown that oxidation is particularly destructive to vitamin C—*i.e.*, when air is allowed intimate contact with pulp or juice during preparation of juice or ketchups, etc. Vitamin A is stable under usual process conditions, but is removed by filtration. Vitamin B is affected if conditions favouring oxidation obtain. Vitamin C potency was maintained during regular canning methods, and concentration in open kettles to two-fifth volume or greater concentration *in vacuo* does not influence the vitamin C. Preliminary admission of air must, however, be avoided. Steam appears to have a protective influence on vitamin potency, and the authors consider this suggestion, if accurate, as useful in food manufacture. They conclude: "By performing any operation on food products in steam, grinding, grating, crushing, etc., could be accomplished without contact with air." It is not considered to be a "cure-all" in food manufacture, but check tests could readily be made.

The Bakery Trade in 1930

By EDMUND B. BENNION, M.Sc., Tech.A.I.C.
(*Joint author with J. Stewart of "Cake Making and Small Goods Manufacture."*)

THE PAST year in the baking trade saw the accomplishment of a great deal of steady progress, though, as will be noted later, success in one direction, and for one branch of the trade, can entail a corresponding set-back for another section of the industry. This appears to be one of the fruits of modern competitive trading, and it has to be borne tranquilly as one of the minor ills which progress often brings in its train.

Bread Making.

The two principal sections, bread making and confectionery, require separate consideration. If the average person were asked whether there was any appreciable change in the bread delivered to his door to-day compared with that which he received three or four years ago, he would probably say that, except in price, there was not. This year, however, in certain parts of the country, and especially in Lancashire, an important innovation has been made. This is the slicing of bread; originally an American innovation, as was mechanical wrapping, it has been introduced into this country and is meeting with considerable success. In fact, its success has been such that many bakers who did not consider themselves competitors of the larger firms have felt the effects of the new trade. The introduction of slicing has also caused greater attention to be paid to the production of high quality bread, since any defect in the texture of the bread becomes obvious on slicing. The particular idiosyncrasies of the machine have also to be studied and a loaf produced to suit them, otherwise considerable difficulty is experienced with the slicing.

Another progressive feature is the gradual development of semi-automatic bakeries, equipped with the latest open movable pan type mixer. The latter are supplied with extra pans, so that the use of wooden troughs is dispensed with, and, as a result, hygienic conditions of manufacture are much more easily maintained. The use of the ultra-violet lamp has also increased, although the claim that the use of such a lamp synthesises vitamins in the dough is now being revised. Much research has been carried out in several countries on the irradiation of dough, flour, and yeast, producing a quantity of conflicting evidence. This is a difficult subject for investigation, and it requires a special type of research worker if true results are to be obtained, as absolute data are not easily obtainable.

The mechanical mixing of dough has received attention, and a paper has been published as a preliminary piece of work on this subject, on which further work is still in progress. Much has been done in America on the experimental baking test, in order that a really satisfactory method may be evolved.

The use of milk and malt products continues, and a new product, which consists of a malted milk powder made by dissolving malt extract in skimmed milk, and spraying this mixture in the usual way, has found considerable approval, and has shown itself a very useful product, since milk powder alone is not always an ideal enriching agent for a dough. The use of emulsions of fat or oil and milk has increased steadily, and is now widely adopted. A new preparation has been marketed in which the milk and fat are emulsified, and then sprayed in the usual manner, so that a fine homogeneous powder is produced. When required, this is dissolved in water, and is available for immediate use in the dough. The proportion of fat to milk is that which has been found most satisfactory by research over a number of years, and this is proving a valuable addition to the many useful raw materials which can now be used to produce a good quality loaf.

Turning to the ovens used for bread making, one can say that progress has been made in the development of electric ovens, and while the number of this type yet in use is small, owing to the high cost of current, the design and baking qualities are such that, omitting the price factor, they are equal in all other respects. Oil firing is proceeding, and most large units have now adopted this method as being more flexible, cleaner, and more easily controlled. Travelling swing tray ovens are finding extensive use, since the "all purpose" plant has made it possible to bake crusty shapes as well as tin bread in the same oven at the same time, if necessary.

Confectionery.

Development during the past twelve months in this important side of the trade has been largely in the production of sponge goods in numbers that could never previously have been realised. Millions of sponge cakes, Swiss rolls, and sponge sandwiches are being made each week, and the production of these has become a very highly specialised and scientific trade. All the raw materials must be carefully standardised, while every process must be timed accurately and temperatures carefully controlled.

In the production of Swiss roll the whole process is automatic from the making of the batters to the wrapping of the roll prior to its automatic packing in the box. The new Morton Pressure Whisk has been found very successful in producing this type of sponge, and with this whisking under pressure the time of producing each sponge batter is reduced to one-fifth, so that the output can be increased correspondingly. The ovens are now constructed as travelling bands on which the sponge roll is deposited as a continuous piece, so the difficulty of handling, cleaning, and greasing trays is eliminated.

The slab cake trade has not been so prominent during the past year, and although there is still a big demand for this, the increased demand for sponge goods must have made considerable inroads.

As far as the raw materials are concerned butter has during the last six months reached a price at which no baker with a good class business could afford to neglect it, so that the consumption of this item has increased, and the margarine manufacturers

have had an experience of realising the difficulty of selling products which formerly had a fairly ready sale. New varieties of vegetable fats have been marketed during the past year, and much research is being carried out in an endeavour to improve their creaming qualities and to obtain the maximum lift. Further work has been carried out by the producers of sugar preserved eggs and similar products, and several additional preparations have been marketed, which, however, can only be regarded in the nature of substitutes. Lecithin products are receiving more attention, and the use of them in confectionery is under investigation. For the confectioner who specialises in fruit flans a new pectin product, produced from fresh apples, has been marketed under the name of Pomosine, which by the addition of a small volume of a natural fruit acid can be converted into good jelly in five minutes. This is of remarkable clarity and gives a most pleasing effect to the flans. Further, it has a great advantage over the ordinary gelatinous piping jellies in its superior eating qualities and food value because of its preparation from the fresh apples.

Research into cake making processes has been carried out in America and this country. The question of order of procedure in the incorporation of ingredients has been studied, and as a result a new method has been evolved. The question of cake batters and the most suitable temperature at which to work them has received detailed consideration, as a result of which a temperature of 73° F. was recommended. The time and speed of mixing of batters has also been considered, whilst the production of cake batters under pressure is now receiving attention.

As far as machinery for cake making and general confectionery is concerned, while no new machines have been introduced, a greater use of the existing ones has been made. Many bakeries in which formerly no machine existed, now contain a modern all-purposes mixer machine eminently suited for the various classes of work required to be done, not only in the production of the cakes themselves, but also for fillings and decorations.

The question of nomenclature of goods is likely to be of importance if the appeal in the recent Swindon artificial cream case goes against the defendants, for every baker in the country will then be compelled to state whether his cakes contain dairy cream or artificial cream. What will become of the humble cream cracker in such a case is a question that may well be asked. Regarded all round, the year has been of progress in all branches of the trade, for adverse trading conditions create opportunities of taking stock of every branch and side of the business and of thus realising where the weaknesses lie. It is well that this should be so. The past year has seen a greater number of bakers' shops than ever converted by the introduction of modern well-illuminated shop fronts. In the past, far too little attention has been paid to shop window dressing, and many bakers' windows have had an almost poverty-stricken appearance. There are few cases where the replacement of the old front by a new window has not resulted in increased sales, and this, in conjunction with correct concealed lighting, is an important step towards prosperity.

Standards for Jam

The following information has been supplied by the Food Manufacturers' Federation.

THE Jam Section of the Food Manufacturers' Federation, Incorporated, which is the national organisation of the jam manufacturers, and fully representative of the trade, decided some time ago to investigate the question of standards for jam and methods of labelling. The object in view was to create and maintain satisfactory conditions in the trade by establishing by agreement *minimum* standards of quality below which jams should not be manufactured, and to fix designations for jams, so that the public should be able to distinguish jams made to such standards.

A thoroughly representative committee was formed, and after long and careful consideration proposals were submitted, which have been accepted by the manufacturers.

At an early stage the committee sought the co-operation of the Society of Public Analysts, which was readily given, and as the result of many consultations agreement has been reached on all points.

On the question of labelling the committee took into consultation the Federation of Grocers' Associations, together with other representatives of the distributive trade, including the large Departmental Stores, Multiple Stores, and Co-operative Wholesale Societies.

Basis of Standards.

Standards have now been fixed for first-quality jams and second-quality jams, the basis of such standards for both being: (*a*) A *minimum* percentage of soluble solids; (*b*) a *minimum* fruit content for each variety of jam.

Included in the term soluble solids are the sugars, both added and natural to the fruit, and soluble substances present in the fruit. The percentage of soluble solids under the trade standards has been fixed at a higher figure than that obtaining in any Dominion or foreign food regulations, and insures full weight of jam in F.M.F. branded jars, properly filled.

With regard to the fruit content of jams, two schedules have been drawn up for jams of first and second quality respectively, which provide in each case for a fixed *minimum* percentage of fruit required to be present in finished jams in the various named varieties. The percentages for *first-quality jams* are based upon figures which were the pre-war standards in every case, and for forty or fifty years jams made on similar recipes have been recognised by the public as being of first quality.

For *second-quality* jams the minimum percentage of fruit content has been fixed at a lower figure, below which no jams will be made in future.

Labelling.

In order that the trade and public may recognise jams which are made to the standards agreed upon, it is provided that *first-quality jams* shall bear on the label the following description:

FULL FRUIT STANDARD

This jam is guaranteed to conform to the agreed full fruit standard of the Food Manufacturers' Federation.

For *second-quality* jams the description agreed upon is as follows:

LOWER FRUIT STANDARD

This jam is guaranteed to conform to the agreed lower fruit standard of the Food Manufacturers' Federation.

It is also required that the presence of fruit juice in second-quality jams shall be boldly indicated on the label, the words " with other fruit juice " to appear in letters of a size equal to that of the named fruit or fruits.

In the case of mixed jams, both of first and second quality, it is required that where the proportions of fruit are not equal the name of the fruit forming the larger content shall appear first in the description on the label.

Chocolate and Candy in 1930

By A WORKS CHEMIST

Though very low prices prevailed for raw materials during the year, there has been no abatement of research and experimental work towards improved methods and procedure. Experiments with lecithin have shown that it is possible to produce a covering chocolate containing 29 per cent. of cacao butter, while the elimination of the cocoa moth and the practical success derived by British manufacturers from the research on "bloom" and the like are also encouraging. The points dealing with export and home trade are worthy also of general note.

THE STABILITY on which the chocolate and confectionery industry is based, and the centralised confidence which animates those who are connected with it, in spite of adverse odds, are astounding. With all the sundry duties on its raw material, the industry pays its daily toll to the Exchequer, helping to foot the nation's bills, and the Chancellor is so gratified that he wants us to sing about it in opera! But it is difficult to find anything in the confectionery world to sing about. Apparently the Chancellor wants to see *The Confectionery "Revue,"* 1930, but what we want him to see is the *Confectionery "Review,"* 1930. It is a pity that the new Educational Bill has been shelved for this session. A small matter of spelling can make such a difference.

Taking industry as a whole, 1930 has been a bad year—worse for some than for others. Confectionery, being in the luxury class, is dependent on the staple industries which control the spending power of the public; and, bad as 1930 has been for industry in general, the confectionery side has naturally suffered, though not to an extent comparable with the general trend of trade.

Sugar.

In spite of various efforts to the contrary, the price of sugar reached a level in 1930 far below its pre-war figure. In 1914 it stood at 15s. duty free for fine granulated, while to-day it is more in the neighbourhood of 10s., to which, of course, has to be added 9s. 6d. duty.

The Cuban scheme of locking up 1,500,000 tons has not had the stabilising effect expected, and with the rumour now current that Russia is laying down extra acreage to beet, and threatens to swell the over-production, it is difficult to say anything about prices.

The low prices in the sugar market have stimulated research to find further outlets, and there is one firm who are experimenting with the manufacture of motor spirit from sugar, possibly to keep some of the money within the Empire and stop it draining to the United States in the settlement of petrol bills.

Should this develop it will naturally call a halt to the falling sugar prices and possibly cause a rise—for which the confectionery industry will ultimately pay. Thus, instead of the old combination of tobacconist and confectioner, there may come a time when it will be garage proprietor and confectioner to offset loss of profit and to keep the money draining from the confectionery industry.

Research.

1930 has given its fair share to the confectionery industry in the way of improvements, adaptations, and increased manufacturing efficiency. The Research Association has, we hope, put the final nail in the coffin of the moth, and there will be no tears from the chocolate manufacturer to supply the required humidity to encourage development of any unburied ova.

The work being done on the fluidity of chocolate and the use of lecithin may prove very valuable, and the results obtained by those manufacturers who have experimented with it have given the necessary stimulus for further research. Although cacao butter is now at a price lower than it has been for many years, the prospect of making a covering chocolate with something in the neighbourhood of 29 per cent. of cacao butter will do more to stabilise the quality of the product and eliminate cheaper fats—an advance in the right direction.

From Austria comes the news that work has been carried out on the irradiation of chocolate with successful results. Apart from any selling powers which this may add to chocolate, it is hinted in the report of the experimenters that irradiation may have some effect on the tannins and those intricate compounds which are the origin of acridity in cacao—a point worthy of note in the development of flavour of chocolate.

The development of the Drayton-Backes automatic regulator for enrober control gave yet another means of improving the product, as well as increasing the efficiency of production, while the advent of the Velvos conché is an improvement of 1930 worthy of note.

The general introduction of cerelose sugar (dextrose) to the market, and the work done on the use of this sugar in confectionery, has been retarded owing to the abnormal sugar prices. It is, however, another string to the confectionery bow which one can bear in mind for further occasions.

Export.

Many points arose in 1930 concerning exportation of confectionery which are difficult to explain. In the first place, it appears that England has not availed herself of the opportunity of taking part in the Paris Exhibition of next summer. Apparently we do not worry about the American competition in the Argentine, yet we ignore France, our next-door neighbour.

Are we admitting that we are afraid of Swiss competition?

An interesting note concerning exportation comes from America. Apparently a movement is on foot to consider revision of the present 40 per cent. *ad valorem* duty on candy and sweetened chocolate, based on the fact that in 1914 the total imports of candy and sweetened chocolate was in the neighbourhood of 1,700,000 lbs., whereas in 1929 it rose to 4,000,000 lbs. The point of interest, however, is that the United Kingdom is the largest individual exporter of candy and chocolate to the United States. Of the 4,000,000 lbs. taken by America in 1929 the United Kingdom contributed 600,000 lbs.

To offset this it must be remembered that the United Kingdom is America's best confectionery customer, to the extent of 3,745,000 lbs. in 1929!

Figures for 1930 are not yet to hand, but this certainly is a point for the British manufacturer to note. Will 1931 see the figures reversed? The resources of the industry in England are second to none, yet these figures can and do exist.

Home Trade.

As to home trade, the chocolate manufacturer has done his best against great odds in 1930. He has improved his product and improved his packing, but there are still many things which could have been done by the industry as a whole. Like the chicken that scratches among the chaff in the hope of finding a grain of wheat, it may not be amiss to reprint the following which appeared in an American journal under the title, "Reasons why the Candy Industry is not Progressing in America." Exactly how far these apply to England is difficult to say, but—with due respect to the exceptions—some are worthy of note. It is, however, interesting to note that the candy industry in America, as in Britain, has felt a setback in 1930. Here are some of America's reasons:

Rebates and discounts to wholesalers and chains.

Encouragement of price cutting.

Failure to protect independent merchants giving a fair opportunity to make a reasonable profit.

Too many "Copy Cats."

Manufacturers suffering from piracy and similarity in product, package, and design.

Lack of co-operation.

Periodic over-production.

The Antwerp Convention.

The Congrès International des Fabricantes de Chocolat et de Cacao, held in Antwerp in September to consider standardisation and definitions, was attended by a representative party of English manufacturers. The Berne resolutions of 1911 were discussed and amended, but England, as a country, dissented to the agreement.

The basis of the English objection to definitions such as suggested by the congress was that it impeded initiative and research and restricted individual progress.

The Olympia Exhibition.

The Third Annual Exhibition of Chocolate and Confectionery at Olympia was held in August. The exhibition was the finest of its kind and equally successful. The fact that on the opening day the temperature stood at 92° F. in the shade without affecting the large display of chocolates is evidence of the applied science in manufacture and improvements derived from research in the past few years.

The Share Market.

Confectionery as an investment shows but little change. In spite of adverse trade the prices at which confectionery shares changed hands during 1930 were on a steady level—a sure sign of stability if not of progress.

Unemployment.

The unemployment figures for the industry in 1930 show a rise on 1929, but it is not comparable with the reduction of output through trade depression. The tendency nowadays in the industry is for more elaboration in decoration and packing, with the result that factory space and employment figures have gone up well in advance of output. This, at any rate, is good for the community in general, although not strictly economic.

Ministry of Health Report.

From the Ministry of Health Report issued in September it was stated that of the 885 samples of confectionery examined only 14 were found to be adulterated or not up to standard—a percentage of only 1·6. A very creditable performance for the industry and evidence of high standard of purity.

In conclusion, it is interesting to note that the British Government have put forward the proposal to set up a marketing board for milk with the object of stabilising quality and so encourage the use of more British milk in the manufacture of milk chocolate—one of the greatest outlets for milk in this country.

Acidity of Bread

IT IS said in a recent paper in the *Mitt. Lebensm. Hygiene* (1930, Vol. 21, pp. 99-103), by von Fellenberg, that the taste of bread and the degree of acidity are correlated. By degree of acidity is meant the number of cubic centimeters of normal sodium hydrate which is required to neutralise the amount of acid present in 100 grams of bread. Von Fellenberg recommends the following method for finding the degree of acidity of different samples of bread: Free the bread from crusts, and grind 10 grams of crumbs to a paste with 20 c.c. of water in a mortar. To the mixture add 80 c.c. of water, 1 c.c. of saturated calcium chloride, and 0·5 c.c. of phenolphthalein. Then titrate slowly until a red colour is obtained which lasts for 15 seconds. Bread which has a degree of acidity of ten or more is classified as a strongly acid bread.

The Canning Industry: Review of Progress made during 1930

By F. HIRST, M.Sc., A.R.C.Sc.,
Resident Director, University of Bristol Research Station, Campden, Glos.

In view of the extremely rapid progress made by British canning, and the invaluable services rendered to the industry by Mr. Hirst and his staff at Campden, the following comprehensive survey is of particular interest and importance

THE PROGRESS made in the Canning Industry during 1930 was demonstrated very markedly at the Convention held at Leicester towards the end of October. The variety of the canning machinery exhibited, the interest taken in the technical papers given at the various conferences, and the enthusiasm shown generally in all sections, testified to the great headway which had been made in this industry.

The first Canners' Convention was held at Cardiff in 1927. The following year the canners met at Worcester, and in addition to the conference a small exhibition was held. This was undoubtedly a success, as was the one held at Cambridge during 1929, but the standard of these was in no way to be compared with that attained at Leicester in 1930.

At the Cambridge Exhibition there were approximately fifty stands, and of these only about five exhibited canning machinery, almost all of which was of American manufacture. At the last exhibition there were eighty-nine stands, and ten of them were occupied by English firms showing machinery of various types used by the canner or can maker. There were two exhibits of practically complete canning lines and the space covered by these alone would have housed almost the whole of the previous year's exhibit. Hence, in reviewing the progress made during the year, there can be no doubt that the most important advance has been made in the machinery section.

Canning Machinery.

When the National Food Canning Council was formed nearly five years ago, there were no firms in Great Britain manufacturing canning machinery. Consequently the whole of the requirements during the first few years had to be imported from France or the United States of America, and thus in addition to the cost of the machinery there were the heavy transport charges. Our engineering firms were slow in realising that food canning could be carried out as well in this country as in other countries, and they did not foresee that there was likely to be a demand for this class of machinery. During the past year, however, great headway has been made, and to-day almost every type of machine necessary in the canning of fruit and vegetables can be purchased in England. There are apple peeling and coring machines, syruping machines, exhaust boxes, closing machines, automatic cookers and coolers, viners, blanchers, and filling machines, all of British manufacture, and obtainable at a figure lower than that at which they could be imported.

Can Making.

Unfortunately, the same cannot be said of the automatic can-making machinery, as this has still to be imported from America; nevertheless, great progress has been made by the can manufacturers during the year just ended. The pioneers of the canning industry in this country had to make their own cans, and as the number required was limited they could not afford to instal the most modern automatic machinery. The use of such plant is only possible when the cans are made by firms who specialise in their production, and the advance made in the can-making side of the industry during 1930 has been largely in the use of the most modern high speed production plant. During the year under review lines of machinery capable of turning out 250 to 300 cans per minute have been installed in a few factories, and, with the increased efficiency and bigger output, it has been possible to reduce the price of cans considerably.

Canned Fruit.

There has been, again, a large increase in the pack of canned fruit, and there is every indication that the demand for English canned fruit is growing. The cost of the raw material was very much lower during 1930 than in previous years, and with the exception of strawberries and loganberries there was plenty of fruit available for the canners. The spell of wet weather early in the season spoilt the raspberry crop to some extent, and as a result the pack of this fruit was lower than it would otherwise have been. The plum crop was exceptionally heavy, and consequently much of the fruit was too small for canning. There were good crops of gooseberries and blackcurrants, but the canner is unable to take unlimited quantities of these fruits, as when canned they do not sell so readily as some of the others.

Fresh Peas.

The pack of fresh peas was probably more than double that of 1929, and as the quality of this product gets better known amongst the public, the demand will continue to expand. The English climate is particularly suitable for growing this vegetable, and in those districts where the canneries are situated the farmers are finding it profitable to grow peas for the canner. During the past year British-made viners have been in use, and, in addition, blanchers, graders, and filling machines are now manufactured.

National Mark.

During the past year the National Mark has been applied to canned fruit, peas, and green beans, and it has been adopted by sixteen firms. Standards have been introduced ensuring good quality fruit and fixing minimum strengths of syrup, and it is hoped that by adhering to the specifications laid down in the schedule the quality of the products will eventually reach a very high standard. National Mark canned fruit and vegetables have been advertised very extensively by the Ministry of Agriculture, and there has been a good demand for them by the retailer and the public.

Corrosion.

One of the most important problems from the point of view of the fruit canner is that of hydrogen swells and perforations. This source of loss results from gas production associated with the corrosion of the tinplate by the fruit. This may be localised and cause perforation of the cans, or it may be of a more general nature causing the evolution of hydrogen, which eventually leads to the cans having a blown appearance.

Canners in this country who do not export have not suffered great losses as the result of corrosion, but those who have attempted to develop an export trade to the hotter parts of the Empire have had a fairly large proportion of their cans rejected by the health officials at the ports at which the cans were landed.

Much research work on this problem has been carried out in America, and the subject has received attention by research workers in England during the past few years. There appear to be certain substances which accelerate and others which inhibit corrosion, and it is along the lines of finding suitable inhibitors that the research work is developing on this side of the Atlantic. In connection with the experiments on this problem, two constant temperature rooms have been installed at the Campden Research Station. One of them, which has now been in operation for well over a year, is kept at a constant temperature of 72° F., this being the highest average temperature likely to be encountered in this country. The other room, which was installed a few months ago, is kept at 95° F., a temperature to which cans may be exposed in tropical countries. Several thousand cans, covering many different experiments, are now stored in these rooms. The subject is also being studied at Cambridge. A Canners' bulletin entitled, "Hydrogen Swells, Springers, and Perforations in Canned Fruit," was issued by the Campden Station during the year.

Vacuum Closing or Heat Exhaust in Fruit Canning.

Another subject which is of interest to canners is that of vacuum closing machines in relation to the present heat exhaust process. A comparison of the two methods in fruit canning has been made, and a preliminary report on the investigation was given at the Canners' Conference at the last Convention.

Lacquers.

In the sterilising of canned vegetables and meat, volatile sulphur compounds are liberated, and these cause a blackening of the tinplate. The acid-resisting lacquer used for coating the inside of fruit cans does not prevent this discoloration, but a sulphur-resisting lacquer is now available, and it has been used with very successful results during the past year.

Varieties.

(*a*) *Fruits*.—Fruit growers are now alive to the possibilities of growing fruit for the canning factories, and in this connection they require to know which of the many varieties of each particular fruit are most suitable for canning. Extensive tests have been carried out at Campden during the past few years, and the writer of this article gave a paper recording the results of some of these trials at a meeting of growers at the Leicester Convention.

(*b*) *Peas*.—Pea canning is now receiving more attention than previously, and canners require to know which of the numerous varieties give the best results. As a result of tests carried out during several years, this information is now available, but, in addition, it is necessary to know which varieties will grow best in the district where the cannery may be situated. During 1930 tests were arranged in conjunction with the Kirton Agricultral Institute and the Norfolk Farm Institute, who made extensive trials on the growing of various varieties, and samples of each were sent to Campden for canning tests. The knowledge gained from such trials should be of great benefit to the pea growers and canners in East Anglia.

New Products.

There has been a very large increase in the canning of dried peas during the year, and this has proved a very useful line for keeping the canneries busy during the winter months. Another product which is likely to receive attention in the future is canned new potatoes, and preliminary experiments have given very encouraging results.

Machinery Requirements.

Automatic cookers and coolers for the sterilisation of canned fruit are obtainable at a reasonable price. The majority of food products, however, which are preserved in cans require to be sterilised under pressure, and yet there is no automatic retort which can be obtained at a moderate figure. The automatic machine used for processing canned fruit is used only for a few months during the summer, and is lying idle for the remainder of the year, thereby increasing the overhead charges on the product. What is required is a moderate priced automatic cooker and cooler which could be operated at atmospheric pressure for sterilising fruits during the summer, and which could be used for those products requiring higher temperature for the remainder of the year.

(*Continued on page* 18.)

Court Decisions of 1930

By W. SUMMERFIELD, M.A., B.C.L., LL.B., BARRISTER-AT-LAW.
Author of "The Law of Arbitrations and Awards," "An Outline Study of Contract Law," etc.

The author reviews the principal court decisions of 1930 on such subjects as the sale and measurement of bread and milk, and the registration and restriction of trade marks.

Bakers

SALE OF FOOD (WEIGHTS AND MEASURES) ACT, 1926

A. Walkling, Limited v. *Robinson*

The 1926 Act, which is designed to afford "better protection of the public in relation to the sale of food," enacts penalties for a variety of offences, among them being: (i.) Selling any article of food which is deficient in weight, measure, or number (under section 1); and (ii.) selling bread otherwise than by net weight, *or* selling or having in possession for sale loaves of bread the net weight of which is not "one pound or an integral number of pounds" (under section 6).

Section 12 of the Act goes on to provide that a defendant against whom proceedings are brought for alleged deficiency of weight is entitled to be acquitted if he can prove that the deficiency was due to a *bona fide* mistake or accident or other causes beyond his control, and despite his having taken all reasonable precautions to prevent such deficiency, or due to the action of some person over whom he had no control (subsection 2). Further (under subsection 5), if an employer is charged he is entitled to be exempted from penalties if he is able to produce to the court some other person as the actual offender and can show that the offence was committed without his "consent, connivance, or wilful default."

This was an unsuccessful appeal brought by a multiple bakery firm against a conviction under section 6 of the Act, the offences having taken place in connection with one of their seventy-four branches—viz., at Hendon. The respondent Robinson was the chief officer of the Public Control Department of the Middlesex County Council.

It was urged in support of the appeal that the branch manager was the actual offender, and, further, that having installed a machine at a cost of £250 (believed to be the best obtainable), which, if properly adjusted, controlled by a dial the quantity of dough for each loaf, and having employed travelling inspectors to see that the provisions of the Act were being carried out at the branches, any deficiency provable was due to causes which, by the terms of section 12, entitled them to be acquitted or exempted.

The court held (*a*) that the firm had not proved their contentions under subsection 2 of section 12, and, therefore, the question raised under subsection 5 did not arise at all; (*b*) that the branch manager was, in any event, not the actual offender: he had not "possession" of the incriminating loaves any more than any of the other employés at the branch; (*c*) most important of all, that the grounds of defence afforded by section 12 were available only if a charge was brought for "deficiency" under section 1, and not, as here, for the specific offence of "irregularity" in respect of bread comprehended within the scope of section 6. The three judges, however, before whom the case was finally argued, after it had been before the Court of Quarter Sessions on appeal—namely, Lord Chief Justice Hewart and Mr. Justice Avory and Mr. Justice Talbot—were not agreed upon the point whether this offence under section 6 (selling or having for sale "2-lb." loaves which weighed appreciably less than 2 lbs.) could not be said to be also an offence under the wider terms of section 1, and thus make available the grounds of defence set forth in section 12.

Milk

MILK AND DAIRIES (CONSOLIDATION) ACT, 1915; MILK AND DAIRIES ORDER, 1926 (S.R. & O., No. 821)

Easington Rural District Council v. *Gilson*

The respondent Gilson was convicted of an offence under the 1915 Act and the Statutory Order of 1926—viz., that of "purveying" milk without being duly registered. The court held that it is not sufficient for a "purveyor" to be registered with the sanitary authority of the district where his cowsheds and dairy are situated; he must be registered in each district where he carries on business. Gilson was registered by the Rural District Council of Durham. The offence charged against him was in respect of sales in the Easington area, where he was not registered.

It must be borne in mind that: (*a*) All "dairymen" must be registered under the Act; (*b*) "dairymen" includes all "purveyors" of milk, wholesale as well as retail; and (*c*) a "dairy" is defined by the Act to include any place in which milk is kept or used for manufacturing purposes.

Champagne

TRADE MARKS REGISTRATION ACT, 1875; TRADE MARKS ACT, 1905

Champagne Heidsieck et Cie. Monopole S.A. v. *Buxton*

The plaintiffs in this case were a French firm of wine producers who made up and sold in bottles the well-known "Champagne Dry Monopole" bearing

their name. The wine was prepared in several types, including one known as "Brut" wine for the French market. The selling agents were instructed not to export it for sale in England, as the plaintiff company made up a special type, not so sweet as the "Brut" brand, adapted for the tastes and requirements of the English market. The defendant, however, imported "Brut" and intended to sell bottles of it in England. The company thereupon brought this action, in which they claimed that Mr. Buxton's conduct was an infringement of their trade mark No. 449,612, and that any sales of "Brut" effected by him in England would render him guilty of deceiving purchasers by passing off the French brand as if it were the English brand; thus, further, he would cause damage to the company's trade reputation, in respect of which they asked for damages in addition to an injunction.

The court dismissed the action with costs, laying it down that the Trade Marks Registration Act, 1875 (section 3), conferred upon the registered proprietor of a trade mark merely the right to place upon his goods a badge denoting their origin, with an exclusive right to use that badge so as to prevent purchasers of other articles being deceived into supposing that they were buying his goods. It did not confer upon him the much wider right which the Champagne Heidsieck Company argued it did—namely, to impose terms and conditions under which such goods might be sold by any person dealing in them. Further, the Trade Marks Act, 1905 (sections 3 and 39), which really superseded the provisions of the 1875 Act, made the position free from any doubt which might have existed under the earlier statute without altering the actual rule introduced by it.

As to deceiving English purchasers of the "Champagne Dry Monopole" bottles, Mr. Buxton was simply offering bottles made up and labelled by the Champagne Heidsieck Company themselves; if, therefore, the design of the bottles or the get-up of the labels insufficiently distinguished the "Brut" brand from the English market brand, the company had only themselves to blame. In point of fact, the labels used by the company were distinctive: the "Brut" bottles had that word printed in red across the label, which bore the words "Maison Fondée en 1785"; the English bottles, on the other hand, had two labels, one of which was inscribed: "Established 1785," "Registered Trade Mark," and "Reserved for England."

Beer

TRADE MARKS ACT, 1905

Re the Application of Nicholson and Sons, Limited

An interesting feature of this case was the fact that it concerned the trade mark registered as No. 1 on the Register of Trade Marks instituted after the passing of the Trade Marks Registration Act, 1875. It was the property of Bass, Ratcliff and Gretton, Limited, the brewers, of Burton-on-Trent, and consisted of a solid triangle which had been used by them since 1855 as their trade mark; red, white, blue, and purple colours were used for the triangle to distinguish casks of beer brewed at their three breweries and for export trade respectively. In February, 1926, they registered the word "Triangle" as an additional trade mark.

In November, 1926, Nicholson and Sons, Limited, who had been established as brewers at Maidenhead for some seventy years, made application for the registration as their trade mark for bitter beer of the mark of a broken triangle with the letter "N" inside it, which they had used on their casks for many years. In January, 1928, their application was amended; they desired to add as a trade mark the word "Nicholson" below the broken triangle.

Thereupon Bass, Ratcliff and Gretton, Limited, intervened by opposing the application; to this opposition Nicholson and Sons, Limited, retorted with an application to remove from the register the "Triangle" additional trade mark which Bass, Ratcliff and Gretton, Limited, had registered in February, 1926.

In August, 1929, the Assistant Comptroller of Trade Marks, having heard together the application of Bass, Ratcliff and Gretton, Limited, and the counter-application of Nicholson and Sons, Limited, decided in favour of the latter firm on both applications, although he limited their triangle to white and black colours only. The former firm thereupon appealed to Mr. Justice Farwell in the Chancery Division, who decided in their favour, holding as a fact, upon the evidence, that the triangle design with the word "Triangle" connoted exclusively Bass's beer in the public mind. At the moment of going to press we learn that Nicholson and Sons, Limited, have appealed against this decision of Mr. Justice Farwell in favour of Bass, Ratcliff and Gretton, Limited. Whatever may be the ultimate decision of the Court of Appeal, the reasons prompting the decision of Mr. Justice Farwell will remain important, since they illuminate three extremely important sections of the Trade Marks Act, 1905—viz., 11, 19, and 21.

Section 11 of the 1905 Act prohibits the registration of a trade mark which is "calculated to deceive," while section 19 permits such a trade mark to be registered provided it is an "old mark"—*i.e.*, one which was in use prior to August 13, 1875. Nicholson and Sons, Limited, having used their mark only on casks in the past, might (in the view of the learned judge) cause confusion of their beer with Bass's in the public mind if they in the future used it also on their bottled beers; that is to say, it would be a mark "calculated to deceive." Nor was the judge satisfied that the mark used by Nicholsons was a trade mark as distinct from a quality mark or an "old mark." Finally, Nicholsons were not in a position to crave in aid section 21 of the Act, which provides as follows: The court has power to permit more than one proprietor to register the same (or nearly identical) trade mark for the same goods or description of goods, subject to any conditions or limitations—*e.g.*, of manner or place of use—as it thinks fit, where *either* special circumstances are shown making the grant of such permission proper *or* there has been "honest concurrent user."

Sulphuring Apricots

Procedure recommended by Committee convened by the Council for Scientific and Industrial Research of Australia

(*Abstract of Report for 1929.*)

IN JUNE, 1928, a committee was convened by the Council for Scientific and Industrial Research to consider the question of sulphuring dried fruits and, in particular, to recommend a treatment which would ensure a satisfactory product without leaving an excess of sulphur dioxide in the fruit.

While the committee considered that existing data were insufficient to establish absolutely conclusive recommendations, it was satisfied that sufficient information was available to formulate a procedure which, in the case of apricots, might reasonably be expected to give a satisfactory product in the majority of cases. The sulphuring of peaches and pears, in the opinion of the committee, did not offer any serious difficulties.

In view of the large quantity of apricots that was oversulphured last year, it is apparent that growers must take more care in sulphuring if the resultant product is to comply with the regulations in force here and in England regarding the amount of sulphur dioxide permitted in dried fruit. In his own interests, therefore, every grower producing dried apricots is strongly recommended to adopt the procedure outlined below, when he should experience little difficulty in keeping the sulphur dioxide content below 14 grains per pound and, at the same time, produce a marketable product.

Recommended Procedure.

(*a*) *Maturity.*—It is essential that all fruits be picked "eating ripe" and that, when cutting, all firm or over-ripe fruit should be put to one side and either discarded or sulphured separately, so that all the fruit in one chamber may be of uniform maturity, and, therefore, yield a uniformly sulphured product. It is recognised that firm fruit absorbs sulphur less readily than ripe.

(*b*) *Type of Chamber.*—It is recommended that an airtight chamber be used, the covering of which should be of some light material—*e.g.*, "malthoid." In the case of movable hoods, every precaution should be taken to prevent ingress of air at the base of the hood, as, for example, by using compacted, moist earth around the bottom.

A number of small airtight chambers is recommended in preference to one large one, so that fruit shall not be held for any length of time after cutting and before sulphuring. For example, when using 6-ft. by 3-ft. trays, the size of the chamber should be sufficient to accommodate a stack of about fifteen trays with a clearance of about 6 inches between the trays and the sides and top of the chamber. Trays should be staggered 6 inches when stacking.

Two controllable vent holes, 1 inch diameter, and about 1 foot apart, should be provided in the roof of the chamber close to the wall furthest from the sulphur fire when one fire is used, or in the centre of the roof where a fire is used at each end of the chamber.

A movable vent-glass is a desirable adjunct, in order to view the conditions inside the chamber and to test the condition of samples of the fruit.

(*c*) *Quantity of Sulphur.*—From 7 to 8 pounds of sulphur per ton of fresh cut fruit should prove ample, and it is essential that the sulphur be dry in order to burn readily.

The sulphur pit should preferably be located just outside at one, or both, ends of the chamber, with a free entrance into the chamber and adequate provision for closing the air inlet after the vents are blocked. Only a minimum amount of inflammable material should be used to light the sulphur, and when fumes are issuing freely from the vents they should be closed with tightly fitting corks.

The weight of fruit in a charge should be ascertained by weighing the quantity of pitted fruit on two or three trays; the average per tray and the total weight per charge can then be obtained. Calculate the amount of sulphur necessary, weigh this and measure the volume in a container. Thereafter it would be sufficiently accurate to measure the same volume of sulphur each time a similar number of trays is sulphured.

(*d*) *State of Fruit.*—It is desirable to sulphur as quickly as possible after cutting, preferably within two hours. (Hence the desirability, under (*b*), of a number of small chambers.)

Fruit should be stacked from the bottom upwards in the order in which it is cut. Freshly cut fruit absorbs sulphur dioxide more readily than that cut some time prior to sulphuring, and this arrangement of stacking allows the driest fruit to be in contact with the maximum density of warm sulphur fumes, thus tending to uniform sulphuring results.

(*e*) *Period of Exposure.*—Under average summer day temperatures, four to six hours' exposure to the sulphur fumes is considered sufficient to preserve the colour without oversulphuring. The practice of leaving the fruit in the sulphur chamber overnight is not advocated, as it frequently results in oversulphuring. If it is found essential to sulphur overnight, the vent holes should be opened at the end of three hours.

(*f*) *Characteristics of Sulphured Fruit.*—The filling of the cups with juice is not necessarily a reliable indication of satisfactory sulphuring, as fruit in this condition may frequently be oversulphured.

Correctly sulphured fruit is usually characterised by a firm core, an easily detachable skin with some exudation of juice into the cup, and a general evenness of colour of the cut surface. If the whole of the flesh becomes soft and the cups overflow with juice, it can usually be assumed that the fruit is oversulphured

Mussel Purification

Dr. R. W. Dodgson, Director of the Shellfish Research Station, Conway, has recently contributed a valuable report to the Ministry of Agriculture and Fisheries (Fisheries Investigation Series), dealing with mussel purification. The report gives an account of the establishment of a system of purification of polluted mussels, of the experimental work upon which it is based, and of certain general considerations and suggestions regarding the sewage pollution of shellfish in its public health aspects. The report, which is here reviewed by E. W. Lewis, M.A., Ph.D., covers a period of twelve years, during which period experiments have been carried out and a large plant erected and successfully operated for the purification of mussels.

Shellfish Pollution.

MUSSELS, IN common with other molluscan shellfish, are liable to pollution with sewage. If such polluted shellfish be eaten, in an uncooked or partially cooked condition, by human beings, serious or even fatal illness may—and from time to time does—ensue. It is, therefore, obvious that the consumption of such shellfish is highly undesirable, not only in the interests of the individual consumer, who may contract disease from the shellfish, but also in that of the general public, amongst whom the disease may directly be spread, possibly on a larger scale.

In a general statement of the case, it would tend to obscure the issue if an attempt were made to analyse the evidence upon which the premises set forth in the first two sentences of the preceding paragraph are based. It will suffice to point out, at this stage, that a mass of epidemiological evidence has been accumulated, especially during the last thirty-five years (1893-1927), which places the causal relationship between polluted shellfish and the incidence of certain outbreaks of disease beyond reasonable doubt or cavil. The disease predominantly associated with the consumption of polluted shellfish, and the one upon which the bulk of the investigations has been concentrated in typhoid, enteric fever, including the group of allied diseases, paratyphoid fever, etc.

Mussels as Food.

Mussels possess a high food value and are a favourite dish—in the raw or cooked state—in certain districts of the Midlands and the North of England. The French people are by far the largest consumers of mussels, yet the consumption of the British Isles is increasing, and last year amounted to over 8,000 tons, more than half of which was imported. The mussel industry suffers from a considerable popular prejudice that the commodity is liable to infection. Dr. Dodgson has shown in his report that mussels may now be treated by purification methods, hence avoiding any possibility of infection. The real objection to mussel as a food product appears to be pollution by sewage. Numerous attempts have been made to overcome this difficulty, including the treatment of the sewage in order to render effluents as clean as possible and the introduction of hygienic methods of collecting, packing, and storage of the mussels. The method which Dr. Dodgson describes in this report for the cleansing of mussels from bacteria and other deleterious matter is one of great simplicity, and is now in operation at Conway and Lympstone. It depends upon the action of the mussel itself in filtering from the water all suspended matter, including bacteria, fixing these in strings of mucus and passing them outside its shell. Sterilisation of the water in which the mussels cleanse themselves has found practical application in the process now in operation. The story of the steps by which this simple and satisfactory method was evolved is an interesting one, and is told in Part II. (pages 120-140). It is significant that the real key to the problem was found in direct and minute observation of the normal physiology of the mussel. The reader who wishes to obtain an immediate insight into the purification process as carried out at Conway is referred to Part II., pages 296-311. The report is, however, concerned not only with the purification process in its genesis and its final form, but with all aspects of the shellfish pollution problem.

An Important Work.

Thus, in Part I., the evidence that shellfish may be the cause of disease is critically examined, and the various types of disease so originating are for the first time clearly distinguished. There follows a section on the extent and significance at the present day of the pollution of shellfish beds by sewage, and a thorough discussion of the possible measures which may be, or have been, taken to mitigate such pollution.

The Conway plant process consists of initially removing any adhering matter from the mussels by exposing them to a water spraying operation whilst resting on a grid, after which they are immersed in sterilised sea-water for twelve hours, they are further washed with sterile water, and then allowed to remain in a bath of water containing four parts per million of chlorine over the course of an hour, after which the mussels are ready for marketing purposes.

The report contains an admirable discussion of the economic aspects of the mussel industry, and recommends that establishments for purification purposes be erected in all mussel collecting areas, and that this be made compulsory. The results of the researches of Dr. Dodgson would be equally applicable to the cockle and oyster industries, and certainly highly valuable from the point of view of edible shellfish in general.

(Report on Mussel Purification. By Dr. R. W. Dodgson. Pages xvi+498, H.M. Stationery Office. Price 21s. net.)

Book Review

Wheat. By W. W. Swanson, Ph.D., and P. C. Armstrong. Macmillan. 320 pp. 12s. 6d. net.

Wheat is one of the fundamentals of life. It has been cultivated and used for food for longer than history gives us details. It has been developed sometime in the dim past from wild grasses and brought to its present state through ages of cultivation and cross-breeding. Many books have been written about it, but most of these have been technical, and many have been more concerned with the botanical and chemical characteristics than with wheat as a commercial unit. One has long felt that a book which would treat in a broad, intelligible manner some of the commercial factors involved in wheat production would be a boon to everyone, not only those interested in agriculture or milling, but to every individual who takes the trouble to think about the economic factors of life in general. Such a book has now appeared, and it should be read by all who are interested in their daily bread and want to know something about the great organisation which is now built up for the simple purpose of producing a loaf of bread.

The authors deal with the subject in terms of past, present, and future, and whilst, naturally, the main portion of the book relates to Canadian wheat, there are chapters on the world wheat situation and wheat in Britain. In the first section we read of the wheat country in Canada, of the wheat growers, how wheat is grown, and how it is harvested. All this makes very interesting reading, and contains nothing too technical for the intelligence of the average man-in-the-street. In the second section the statistical side is discussed, not, as it might well be, by a series of tables and statistics, but by a simple, straightforward story of how wheat is marketed and distributed. Later on two very interesting chapters deal with the co-operative system and the development of the wheat pools. A careful perusal of these chapters will enlighten many who have read leading articles on the wheat pools in their daily papers and have got the erroneous idea that the wheat pools were meant solely for forcing up prices or rigging markets. To quote the authors on this subject, "The pool has been fulsomely flattered and bitterly attacked. A fair description—avoiding either extreme—would be to say that it is the wisest move ever made by the Western farmer, and his brightest hope. It seems to have every prospect of success and deserves its chance. Its greatest danger will be from within, but it seems scarcely likely that that danger will become real." The possible reactions in the British market to the success of the pool movements are also discussed. "It is not our intention to picture the British buyer of wheat as in any way an oppressor of the producer. He is scrupulous in the exactitude of his commercial honesty. No market is a safer one for the seller. He merely applies skill and experience with all the advantage of being the greatest single customer of the grower. Nor yet is it to be understood that the buyers of Britain are highly organised among themselves. On the contrary, competition is nowhere keener than among them. As they are all, however, directed by the same purpose, the effect is the same. . . . The incursion of the pool into this field was perhaps the first real attempt to accomplish anything tangible in the obtaining of a better price from the only source from which it could come—from the ultimate buyer; and it is probably true that this was not the primary object of the pool, nor yet a chief reason for the enrolment of most of its membership." The pool first tried to eliminate unnecessary transactions by offering wheat direct from the grower to the miller rather than to the large group of importers of wheat for resale. Then the attempt was made to get a fair price for the grower, and all elements in the British market became severe critics of pool policy, although "their criticisms have not taken the absurd and extreme form of some of those issued by Canadians." The authors' views are summed up as follows: ". . . the British buyer, with his full knowledge of world wheat conditions, is too sensible to fail to realise both the wisdom of the action of the Canadian farmer in organising co-operative sale of his product and the possibility of his succeeding. In that case the pool will be accepted as inevitable, and more thought given to means for persuading it to accept a low price than to attacks on it." In this connection, however, the authors would do well to remember that there are other wheat-producing areas than Canada; if the pool forces up prices beyond those of other areas, Britain will buy elsewhere.

Other chapters on "Milling in Canada," "Transportation," and the "Government," lead up to the final chapter on "The Future of Wheat Growing." The authors state that, "Prophecy requires inspiration and cannot result from a mere exercise in logic"; nevertheless, they proceed coldly and logically to review the possibilities which might bring about a cessation of wheat growing in Canada, such as: (1) A change in world climate; (2) the coming of synthetic foods; (3) social experiments in the direction of better organisation of human effort or by failures of the present economic system to function. This chapter is rather dull and lacks the fire and pulse of prophecy. If the would-be prophet will not let imagination stir his inspiration, then he should leave prophecy and stick to economics. The book ends in a platitudinous and rather sentimental manner: ". . . wheat is a good crop to raise, but there is a better—men and women. We should grow wheat not to keep railways going, nor to build great ports, nor to aid the commerce of the nation, nor yet to feed other countries cheaply. We should grow it to enable us to develop a civilisation and to make a country. It is important to turn it into dollars, but that is not half so vital as to make certain that we use the dollars to make a stable society. The vast stretches of virgin soil are not a mere chance to convert labour into wealth, they are an estate in trust, and on what we do with them depends the future of generations yet unborn." Good sentiment, but scarcely relevant to the actual concrete future of wheat growing.

In spite of the final sentimentality we have read the book with interest and profit, and have not the slightest hesitation in recommending its perusal to all interested in social economics, as well as those specially interested in wheat production.

T. H. F.

The Canning Industry (*continued from page* 13.)

Service Schemes.

Another feature of the year's work has been the introduction of service schemes by the can makers. The can-closing machine is one of the most important units in the cannery, and unless the operator thoroughly understands the machine he is using, and the principles underlying the closing of the cans, there may be many blown cans due to faulty seams. Under the service scheme the canner receives the benefit of the can makers' experience, and he can obtain the service of experts if he is in any doubt about his can-closing operation. If he so desires, the canner may hire his closing machine at a nominal rent from the can maker, and the latter will maintain it in thorough working order.

Food Infection

"Mythical Ptomaine Poisoning"

DR. GERALD LEIGHTON, Medical Officer (Food), Department of Health for Scotland, introduced a discussion on food poisoning at the Annual Congress of the Royal Institute of Public Health at Berwick. One read now and then in the public Press, he said, of an outbreak of what was usually described as "food poisoning," or more often, perhaps, as "ptomaine poisoning." Judging from the accounts of the circumstances, there seemed to be great ignorance in the public mind, and no little confusion in the minds of those who ought to know better, as to the real nature of those cases. Chemical poisons might be administered in food with criminal intent. Many such cases were on record, and had provided the material for famous trials in all countries. They might get into the food accidentally, in which case it was frequently the result of faulty manufacturing processes, as in the case of the presence of arsenic in beer. The food or drink was merely the vehicle of the poison. Poisoning from plants was usually quite accidental, the poisonous plant being consumed either in ignorance of its nature or in mistake for a harmless one.

Bacterial Infections.

But all the ordinary cases of common occurrence were of a third kind—bacterial infections. Most of them were due to the contamination of some food stuff with a specific microbe, either in process of manufacture or handling. In the rare case of botulism, the symptoms were due to the specific toxic alone. In none of the common bacterial cases had the food concerned any special importance or part in the case, except that of the means of conveyance to the patient or patients. It was not the food that mattered, nor even the condition of the food: it was simply a case of specific bacterial infection. None of these cases were food poisoning in any accurate interpretation of that term, nor should they be so described. If the word "food" must be associated with them, they should be called "food infections." Doubtless they had been called food poisoning because they were associated in the minds of many with the kind of cases usually known as "ptomaine poisoning," that mythical disease which had held its own for so long. It was proving extraordinarily difficult to disabuse the public mind, and even the professional mind, of the idea that these cases were due to food which was somewhat decomposed, and that the decomposition products were the cause of the trouble. Probably it was true to say that there was no such thing as fatal ptomaine poisoning in the sense of death from eating decomposing foods. It was true that the products of advanced decomposition of meat foods, decomposed to such an extent that they would never be eaten, were poisonous when injected intravenously. But they could be swallowed without poisonous symptoms, as could many other substances.

It was only when such foods were infected with the specific bacteria of food poisoning that they accounted for those outbreaks, and for that to occur it was not at all necessary for the food to show any sign whatever of decomposition. The worst cases which had come under his own observation had been associated with food which appeared perfectly fresh. For that reason he would like to see the term "food poisoning" abolished altogether. It conveyed an entirely erroneous impression. Thus, if death occurred from eating food containing arsenic, it was called arsenic poisoning, not food poisoning. In Europe the majority of cases of botulism had been associated with meat foods, ham, sausages of various kinds, paste, and so on. In all cases imperfect cooking or sterilisation was the danger. But there again, though the food consumed might show some sign of early decomposition, there had been many cases where no sign of decomposition at all had been obvious to those unfortunately concerned.

Similar matters were discussed last year by Cruickshank, Scott and Savage at the Manchester meeting of the Pathology and Bacteriology Section of the British Medical Association. Professor Cruickshank protested against the use of "ptomaine poisoning" for what was often gastroenteritis; there was no more "poisoning" than there was in cases of enteric fever.

Recipe for Canned Blackberry and Apple

Supplied by the Low Temperature Research Station, Cambridge.

THE apples are peeled, cored, and sliced, as in the method for the canning of apples. The slices are steamed to eliminate gas from the cell tissue and to soften them; the steaming should be continued until the apples show slight signs of disintegration, as the sugar used in syruping will have a toughening effect. Steaming is preferable to boiling, since less loss of flavour occurs.

Half fill *double lacquered* cans with the hot steamed apples and add blackberries to within half an inch of the top. Water free from iron should be employed in the preparation of the syrup, since the presence of this metal causes discoloration. The syrup should contain five to six pounds of sugar per gallon, and should be added as hot as possible; No. 2½ cans require a process of about thirty minutes at 212° F.

The syrup pack is superior to the water pack as regards colour and general appearance; it also causes less staining of the pastry when used in pies.

The success of this pack mainly depends upon the preliminary steaming of the apple, and use of double-lacquered cans. Blackberries, being of low acidity, are liable to produce hydrogen swells in canning; the presence of the apple tends to prevent this. This product affords an economic outlet for apples and should be very popular.

Some Coco-Nut Recipes

By A PRACTICAL CONFECTIONER

AMONG THE many ingredients used by the confectioner, coco-nut belongs to the outstanding few adapted to accept any kind of flavour enhancing its own pleasant and delicious fragrance. It is made up in the form of chips, thread, coarse, medium and fine desiccated. Chocolate assortments, mixtures, bon-bons, etc., are incomplete without the addition of one or more forms of coco-nut. Very palatable lines are jellied squares, boiled goods, creams for chocolate centres, pan work, caramels, nuggets, mown hay, and chocolate farinettes, etc. The formulæ given below are in various forms suitable to the kinds of coco-nut mentioned already.

Coco-nut Jelly Cubes in Four Flavours.

Lemon.

10 lbs. sugar
10 lbs. glucose
3 lbs. gelatine (weighed before soaking)
½ gallon water
½ oz. oil of lemon
2½ lbs. chip coco-nut
Yellow colour.

Method.—Place the sugar, glucose, and water in the pan. Put on the fire—or turn on the steam, as the case may be—and bring to the boil. Take a skimmer to remove any scum that comes to the surface, then insert the thermometer in the syrup and continue to boil until it registers 250° F. Shut off the steam and stir in the soaked gelatine. When the latter has dissolved, add the flavour and sufficient yellow to give a bright colour. Allow this to remain for 15 minutes, and remove all scum that has risen, then stir in the chip coco-nut. When the latter is thoroughly mixed in, take a ladle and pour on tins or cold slab smeared over with olive oil. Each time a ladleful is taken, give it a stir so that each tin will be evenly supplied with coco-nut; this being a light material it naturally floats to the top. The following day the sheets of jelly will be nicely set to pass through the cutting machine. Before doing so smear the face of the sheet with the olive oil. When cut, lay out on tin trays, tin-lined table, or grease-proof paper for 24 hours; then pack in boxes lined with wax paper.

Orange Coco-nut Jellies.

10 lbs. sugar
10 lbs. glucose
3 lbs. gelatine
2½ lbs. chip coco-nut
½ oz. orange oil
Orange colour.

Raspberry.

10 lbs. sugar
10 lbs. glucose
3 lbs. gelatine
2½ lbs. chip coco-nut
1½ ozs. raspberry essence
Pure carmine red.

Vanilla.

10 lbs. sugar (best granulated)
10 lbs. glucose
3 lbs. gelatine
2½ lbs. chip coco-nut
½ oz. vanilla essence
Remain white.

NOTE.—The coco-nut must be free from rancidity and dry. Soak the gelatine just sufficient for the finger to pierce it.

After the batch is cooked and the gelatine stirred in and dissolved it should fall from the spatula, when lifting, in thick sheet or flake.

The above points must be observed to prevent the goods becoming mildew or sour.

Crystallised Coco-nut Caramels.

10 lbs. sugar (white granulated)
12 lbs. glucose
11 lbs. fine coco-nut
4 pints water
30 drops lemon oil.

Method.—Place the sugar, glucose, and water in the pan and bring to the boil. Take off the scum and continue to boil to 240 degrees. Shut off the steam, stir in the fine coco-nut, and turn out on a cold slab sprinkled with small granulated sugar. When nearly cold roll out ½ inch thick, using sugar top and bottom in doing so. The following day cut with the jap machine and mix with the sugar as they are picked apart. Sift out and place on trays ready to pack in the alternative colours; these look very attractive.

Pink.

10 lbs. sugar
12 lbs. glucose
11 lbs. fine coco-nut
4 pints water
1 oz. raspberry essence.

Colour.—French cream pink.
Proceed as above.

Brown.

10 lbs. sugar
12 lbs. glucose
11 lbs. fine coco-nut
4 pints water
12 ozs. cocoa powder
Brown colour.

Proceed as above.

Coco-nut Tablets.

22 lbs. granulated sugar
6 lbs. glucose
1 gallon water
2¼ lbs. medium coco-nut
30 drops lemon essence.

(*Continued on page 27.*)

Trade News

British Canning Developments.

We note that Mr. A. Samson, A.R.C.S., A.I.C., the well-known authority on canning practice, has resigned his position as chief chemist and bacteriologist to Messrs. Poulton and Noel to set up as consulting chemist and food technologist. We understand that Mr. Samson is already engaged upon important work in connection with the development of the canning industry in this country.

* * *

Palm Oil Interests Consolidate.

A new concern sponsored by Messrs. Cumberbatch and Co., Ltd., of Kuala Lumpur, is now in process of organisation, states the Singapore Trade Commissioner. The firm will be known as the Palmoil Bulk Shipping Co., Ltd., and it plans to engage in transporting, storing, and shipping palm oil in bulk. Through the sale of stock shares, which are now being subscribed for, the company will provide itself with funds to purchase storage tanks, tank lighters, and other necessary stationary and mobile equipment to facilitate the handling of palm oil, and will be in a position to take over the transportation of oil for many estates in Johoro or the Federated Malay States. Large producers will be provided with separate tanks, while the smaller operators will either bulk their oil or sell it to the company. Tank steamer loading facilities will be located at Port Swettenham or Singapore, and the company expects by 1936 to be called upon to transport 30,000 long tons of palm oil.

* * *

Russian Vegetable Oil Production.

According to information recently received in London, the production of vegetable oils in Russia during the past season showed a considerable increase compared with last season. There was a total of 335,200 tons of all kinds produced during the present year. Of this amount 183,600 tons was sunflower oil, 63,900 tons of linseed oil, 65,600 tons of cotton oil, and the balance of "other oils." The production of linseed oil met with the Government plan and more, but the quantity of sunflower oil produced was but 59·2 per cent. of the programme. This deficit in sunflower oil is reported due to the defective preparation of the raw material.

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Confectionery Trade in Penang.

The demand for imported confectionery is limited to about 4,000 European residents and some 30,000 wealthy Chinese and Eurasians in the Penang district, which includes Penang Settlement, the Federated Malay State of Berack, and the Unfederated Malay States of Kedab and Perlis, Great Britain being the largest individual supplier. The large native population cannot afford to purchase confectionery of superior quality, but itinerant pedlars sell brightly coloured candies of inferior grade in the native quarters of the cities. Chocolates with hard centres of fruit mixtures or toffy, or chocolate-covered nuts, are preferred, as soft-centre chocolates may not reach the consumer in good condition. The greater part of the imported chocolates is used at the daily bridge or mahjong parties; and also at dinner parties. High-grade confectionery, chiefly chocolates, is consumed in larger quantities at local social clubs. A limited but steady demand for hard candies exists for sale to transient visitors. Caramels and fondants are not sold to any extent because of climatic conditions.

Imports of confectionery at Penang during 1928 and 1929 were:

	1928.		1929.	
Country of Origin.	*Lbs.*	*£*	*Lbs.*	*£*
United Kingdom ..	73,601	3,710	82,355	4,600
Netherlands	67,294	1,400	81,209	2,800
Australia	9,318	800	15,674	1,400
Hong-Kong	22,992	700	14,666	400
Madras	4,372	200	11,918	500
China	80	12	10,000	300
Germany	790	98	6,278	260
United States ..	3,257	95	3,025	140
Other Countries ..	2,877	220	466	26
Totals	184,491	7,335	224,991	10,326

Imports of confectionery into the whole of British Malaya during 1929 were 1,281,543 lbs., valued at £53,156, about half of which came from the United Kingdom and British possessions, followed by European countries, Japan, and the United States. Practically no imported candy is sold in bulk in Penang, chocolates being in air-tight tins and hard candies in sealed jars. Plain chocolate in ½-lb. slabs usually sells at about 1s. 2d. retail, milk chocolate at 1s. 3½d. for ½-lb. cakes. Mixed clear gums retail at 2s. 4d. per lb., chocolates assorted at 3s. 4d. to 5s. per lb. in tins, and chocolates in fancy boxes from 6s. to 9s. per 1 lb. box.

* * *

Power Sifting Machines.

A new electrically driven sifting machine, which seems likely to find many useful applications in chemical factories and laboratories, has been produced by Messrs. A. C. Fraissinet, of Chemnitz. It is made in various sizes and can be adapted to take sieves of different shapes. It can be suspended from above and may be transported along an overhead rail. The vertical motor is enclosed in a dust-proof casing, and both it and the container, which moves the sieve, are mounted on ball-bearings. Shaking is effected by means of an enclosed eccentric device, with a special arrangement to guard against transference of any of the vibration to the motor. Any ordinary hand sieve up to a diameter of 54 cm. can be fixed to the model and readily interchanged.

* * *

The Dairy and Ice-Cream Exhibition.

The National Dairy and Ice-cream Exhibition will be held from the 21st to the 22nd of this month at Olympia. During the course of the exhibition a convention will be held, and there will also be carried out the judging in the competition for the best commercial ice-creams and ices made in Great Britain, which is organised by the Ice-cream Association of Great Britain. Ice-creams entered for this competition must contain not less than 8 per cent. butter fat, with a total milk solids content of 18 per cent., while the "ices" class embraces those mixes which do not comply with this standard. Besides the diplomas awarded by the Ice-cream Association, two cups have been donated by Mr. A. Facchino (of the Facchino Purity Biscuit Co., Ltd., of Birmingham), to be held by the recipient of the premier award in each section.

* * *

The trade side of the exhibition has been well supported, and one of the principal exhibitors here will be Messrs. J. and E. Hall, Ltd. This well-known firm of refrigerating engineers will have a number of interesting exhibits on their stand, not the least of which will be a three-cylinder totally enclosed vertical high-speed ammonia refrigerating compressor, direct coupled to an electric motor. This represents the latest advance in refrigerating machinery, and whether used for making ice-cream, for dairy work, or for other similar purposes, it is claimed to have many features to recommend it, such as maximum efficiency combined with silent running and reliability. Forced lubrication is provided and the speeds at which these compressors run render them suitable for direct coupling to a prime mover, usually an electric motor of a normal design, and, therefore, not unduly costly, while, on the other hand, they may be coupled to an internal combustion engine or a steam engine if desirable. There will also be one of the well-known "Wembley" refrigerating compressors on exhibition, using ammonia as the refrigerant.

These machines are suitable for smaller installations than the type just

mentioned. They are also applicable for direct coupling to the prime mover, but belt-driven models are also made. They are particularly suitable for, and are often supplied with automatic control.

Two examples of the popular "Hallmark" equipment will be shown, one an automatic freezer-conservator, having one freezer and two conservators, the other being a two-hole automatic conservator, self-contained, with all mechanism enclosed within the casing.

The above two models are particularly suitable for the manufacture or the storage of ice-cream on a small scale, in confectioners' shops, cafés, hotels, restaurants, etc. In addition to these exhibits on the company's own stand, a "Hallmark" automatic refrigerating machine, belt driven by an electric motor, will be used for cooling a storage chamber on the stand of the National Dairy and Ice-cream Convention (the organisers of the exhibition). In this cooling chamber will be stored the samples of ice-cream sent in for competition, pending the judging. This particular compressor is a new pattern, having cylinders with a larger bore and stroke than the "Hallmark" machines which have been supplied so far, and which will continue to be supplied in future for smaller duties.

* * *

Drayton Steam Traps.

We have received from the Drayton Regulator Instrument Co., Ltd., a copy of a recently issued booklet describing Drayton steam traps. These are made in various types, suitable for use with radiators or general industrial purposes. The radiator trap is a development from the spirit-filled thermostatic trap, its special feature being the employment of the balanced-pressure principle, which enables the trap to work with highest efficiency at all steam pressures without any manual adjustment being required. The "Industrial" type is a large-capacity trap in which the valve is actuated by a large bellow element, operating on the balanced-pressure principle, which produces ½-inch movement and sufficient power to dispense with levers and toggles. The trap being self-venting and requiring no adjustment, it works efficiently with no maintenance whatever. The element is instantaneous in operation. This feature, combined with the large capacity of the trap, prevents water banking up in the heating battery. The "Euston" for use with saturated or superheated steam, the "Drayton Differential" (a high capacity heavy duty type), the "Weldeck," and "Midget" are other types described in this booklet, which is available to interested readers on request.

* * *

Cod Liver Oil Production in Canada.

Over 91,000 gallons of medicinal cod liver oil were produced in Canada last year. Quebec led in quantity of production with 42,184 gallons to its credit. Nova Scotia accounted for 30,620 gallons, and New Brunswick for 18,218 gallons. The marketed value of the oil was slightly more than £14,600. In addition to the medicinal oil, there was also produced a total of nearly 170,000 gallons of cod liver oil for other uses. Most of the oil was exported to the United States.

* * *

Cider Manufacture in Ontario.

The Ontario Government is considering measures for the establishment of a market for the poorer grade of "cull" apples from Ontario orchards. Arrangements have been completed whereby a winery company will treat 500 barrels of apples, producing not only what is usually described as cider, but also a sparkling beverage of low alcoholic content, based on an English process. It is expected that the new product will be on sale by the autumn of 1931.

* * *

Columbian Canneries.

The importance of the canned fruit and vegetable industry from the point of view of the grower in British Columbia may be gathered from the fact that one cannery alone, that of the Occidental Fruit Company, Ltd., at Kelowna, B.C., turns out in the season 4,000 cases of canned tomatoes daily; over 100,000 cans (equivalent to 150 tons) of Okanagan fruit and vegetable produce in each ten-hour day. Their warehouse has a storage capacity of 250,000 packed cases.

* * *

Italian Sugar Production.

Up to August 30, 1930, there were 1,427,000 long tons of beets worked up in Italy, an increase of 177,000 tons over that at the same date last year. Total production of beets this year is expected to exceed that of last year, but the sugar content is said to be 15 per cent. lower. It is believed that final production of sugar in this campaign will meet national demand, not including the surplus of 61,020 tons carried over from the 1929 crop. Total and *per capita* consumption of sugar is decreasing, it is said. During the twelve months ended July 31, the consumption was estimated at 337,043 long tons, as against 349,494 last year, and during the first seven months of 1930 consumption was estimated at 22,276 tons, as compared with 22,941 during the first seven months of 1929.

* * *

The Spanish Olive Crop.

The earlier predictions of poor yields made by individuals engaged in the Spanish olive business appear to have been fulfilled, according to the Vice-Consul at Seville. The harvest this autumn of queen and manzanilla olives has been the most unsatisfactory in many years, being even worse than that of 1928. Not only has the size of the crop scarcely warranted its collection in certain orchards, but the quality has been so inferior that of the queens it is now believed that not more than 1,000 hogsheads of exportable grade will be obtained, none of these of first quality. Most of the olives bear evidence of a slight blight from insects. The extreme failure of this year's crop, he says, may be illustrated by a concrete example; for instance, in one orchard where queen olives are grown, instead of securing a total of 5,512 lbs., as may be expected in a good year, the present yield will produce not more than 22 lbs. An increase in the price of olives has very naturally resulted, and many exporters have not been in any haste to conclude sales.

* * *

The Portuguese Sardine Industry.

Conditions in the sardine trade for the quarter ended September 30, 1930, have been very quiet, and foreign purchases of sardines have been very small. Shippers have received but small orders from American importers, and the decrease in the normal volume of business seems evident in all markets to which Portuguese sardines are shipped. The general depression in the trade is adversely affecting local packing firms, several of which are reported to be in financial difficulties. Proportionately more boneless and skinless sardines have been sold to American importers. This type of pack appears to enjoy a good sale in the United States, and it is popular among local packers, since it gives them a larger margin of profit than do the other packs.

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It is reported that small fish were abundant at Setubal and Portimao during the quarter under review, and that at Olhao some very large fish were caught during the month of August. According to a local packer of sardines, the small fish are suffering market competition abroad from the Norwegian sprats. The latter are smoked, while the Portuguese sardines are not smoked, but they are both packed in olive oil. All prices for canned sardines are weak, and selling appears to be forced. During the month of August the price of olive oil, which represents about 15 per cent. of the cost of packing, increased approximately 20 per cent. The slackness in the trade is mainly due to the greatly lessened foreign demand for this product.

* * *

Miniature Meat Charts.

A complete set of charts showing various wholesale and retail cuts of beef, pork, lamb, and veal is to be issued by the Institute of American Meat Packers. This is the first time that the complete set of coloured charts has been available to the industry. Some time ago the Institute issued beef and pork charts in two sizes, one suitable for hanging on a wall, and the

other similar to those described below. The interest which was shown in the series of smaller charts prompted the suggestion to issue similar veal and lamb charts. The charts are approximately 7 by 11 inches in size. On one side they show the carcase of beef, pork, lamb, or veal, as well as all of the wholesale and the more important retail cuts. A legend at the bottom of the charts designates the various cuts.

* * *

Not à la Jameson.

Now that American legal authorities have ruled that the making of "home-brews" will not be interfered with, a promising industry in the sale of grape juice seems likely to spring up. As supplied in the bottle, of course, the grape juice is non-alcoholic, but it has only to be exposed to the atmosphere for a few days, and to be encouraged by the addition of a little sugar, for natural fermentation to render it quite an attractive and lively drink. The latest report is that, encouraged by the ruling quoted above, Californian grape growers are banding themselves together in an advertising scheme to boost this latest method of outwitting Volstead. An Englishman's home used, once upon a time, to be said to be his castle, but the American's home now appears to be his brewery, though it would be too much to expect the latter to adapt "J. J.'s" slogan and to refrain from sampling his brew until it was seven years old.

* * *

Foil-Wrapped Cheese.

A decision to request the Ministry of Health to reassure the public that cheese wrapped in tinfoil by British manufacturers is perfectly safe for human consumption was made by the Lambeth Borough Council on the 4th ult. on the recommendation of their Medical Officer of Health and the Public Health Committee. "We are led to believe," reported the Public Health Committee, "that as a consequence of the prominence which was given to the excerpt from the annual report of the Ministry of Health dealing with this particular matter, a very real apprehension has arisen as to the danger from eating cheese wrapped in tinfoil."

* * *

The Medical Officer of Health for Lambeth, Dr. A. G. G. Thompson, had since taken at random twelve further samples of British wrapped cheese from shops in the borough and had them analysed. Dr. Thompson found that on the question of adulteration with tin there appeared to be little to say against wrapped cheese. On the other hand, there was very much to be said in favour of this wrapping practice. The council unanimously endorsed the Medical Officer's recommendation that the Ministry of Health should be asked to review the whole of the circumstances.

"F.M." in Demand.

The New York Public Library has asked us to invite the co-operation of our readers in securing for them a complete set of file copies of FOOD MANUFACTURE. The files in the library commence with Vol. IV., No. 1, and it is thought that there may be some of our readers who have preserved the earlier copies of FOOD MANUFACTURE and who would be willing to donate them. If those readers who do happen to possess copies of our 1927 or 1928 issues care to release them for the use of the New York Library, we shall be glad to forward them.

* * *

New Industry for British Columbia.

Investigations made under the auspices of the Dominion Department of Fisheries this summer into the question of bait supply for the halibut fishery in Northern British Columbia waters had the interesting incidental result of establishing the presence off the west coast of the Queen Charlotte Islands of herring of a type apparently well suited for use in Scotch-curing and kippering. The fish are present in quantities which would enable their treatment to be undertaken on an industrial scale.

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In Inskip Channel approximately thirty-two tons of these herring were taken in three days in the latter part of June, without maximum catching effort, and the fish were generally large and of superior quality. Speaking out of knowledge gained in this area on previous occasions, the investigator, Robert Lloyd, states that these herring are also obtainable in July, August, and September in Inskip Channel and other bays and inlets in this vicinity on the west coast of the Queen Charlottes.

* * *

Canadian Canned Pea Industry Prosperous.

Although the canning industry suffered somewhat from the smaller crops of tomatoes and corn, it was very busy putting up peas, states a recent report from Kingston, Canada. The acreage contracted for was double that of last year and the yield per acre was the heaviest in recent years. Although Canadian peas cannot be sold in the United States after paying import duties, they are being shipped in large quantities to the British market. Two steamship lines maintained weekly sailings from Picton to Montreal, where canned goods were forwarded to Europe, Cuba, and British West Indies. Shipments to Western Canada are also heavy. Canning factories operated twenty hours a day.

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Cranberry Use Extended by Canning.

The development of a process for canning cranberries in the form of sauces, jellies, etc., is announced by the Bureau of Plant Industry of the United States Department of Agriculture, as an increased opportunity for both the consumers and producers of that food product. The sales organisations in cranberries and the United States Department of Agriculture have been co-operating in an effort to make cranberries as much an all-year-round product as possible through canning, rather than being associated exclusively with the Thanksgiving and Christmas holiday season. The use of cranberries is so limited, being only a side dish, as to provide little, if any, competition with other foods. Cranberries have been cultivated for over a hundred years in America, but the area of their successful production is still confined to certain small areas.

* * *

Salmon Pack Record.

With a pack which will probably total about 2,175,000 cases, the British Columbia production of canned salmon in 1930 is setting a new record for the province. Figures covering production up to November 1 show that slightly more than 2,139,000 cases had been canned, or approximately 817,000 cases more than were put up in the corresponding period of 1929, and some 74,000 cases more than the total output in 1926, the year of previous record pack. Reports for subsequent weeks should make the 1930 pack approximately 2,175,000 cases.

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Statements forwarded to the Dominion Department of Fisheries by its chief officer in British Columbia, the Chief Supervisor of Fisheries, Vancouver, show that the unprecedented production this year has been mainly traceable to the remarkable abundance of pinks and the gratifying runs of sockeyes. The production of canned pinks up to November 1 totalled nearly 1,091,000 cases, or almost 200,000 cases above the record output for the full year 1926. The sockeye runs to all the principal areas have been very satisfactory this year, producing 463,867 cases—the best showing since 1915. When returns for the year's operations are complete the production of canned cohoes will probably be less than 150,000 cases, or somewhat under the average pack of the past few years, but there is increasing use of cohoes in the fresh fish trade. The output of canned springs, another type of salmon which is being increasingly used in the fresh fish field, was 36,481 cases on November 1, or more than double the output up to the corresponding date in 1929. The pack of bluebacks is never large, but the output at November 1, 41,836 cases, was nearly 17,000 cases larger than the output up to approximately the same date a year ago. Steelhead production, always small, was well ahead of the 1929 and 1928 figures.

Improving the B.I.F.

That a site easily accessible from Central London should be acquired for permanent buildings for the British Industries Fair, and that the Government should establish a regular annual publicity grant of a minimum of £100,000 (instead of £25,000 granted for a year at a time as at present), are among the recommendations of the committee, under the chairmanship of Lord Chelmsford, whose Report on the future of the Fair was published recently. "The Fair should be developed—and this," the committee states, "is the basic recommendation of our Report—so as to become a truly national manifestation of the quality and range of British products and an increasingly powerful factor in the expansion of our trade. The Government and manufacturers generally should accord it more vigorous support, and the public should be encouraged to learn through the Fair that British manufacturers can supply their needs." It is urged that His Majesty's Government, recognising the Fair "as an integral feature of our economic policy, should back up more vigorously, on a scale not incommensurate with the support accorded to the Empire Marketing Board, the enthusiastic individual efforts which have brought the Fair to its present strength. 'Sell British Goods' is not less important than 'Buy British Goods.'"

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Larger Publicity Grant.

In discussing advertising and publicity, the committee states: "Many witnesses have commented upon the exiguity of the sum of £25,000 as compared with the grant to the Empire Marketing Board. We know the special reasons which led to the creation and endowment of the Empire Marketing Board, but the amount allowed to the Board for Empire Trade propaganda in this country and the amount granted to the Department of Overseas Trade for world propaganda on behalf of British industry cannot be regarded as commensurate with the relative importance to the British taxpayer of the two activities." The committee received overwhelming evidence that £25,000 was totally inadequate for effective publicity for the Fair throughout the world, and it expresses entire agreement with the view that the advertisement of the Fair abroad is of value to British industry generally, and not merely to exhibitors.

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At present the Fair opens in London and Birmingham on the third Monday in February each year (February 16 in 1931) and closes on the Friday of the following week. No alteration is recommended, except that the Fair should remain open on the Saturday of the second week. The public is admitted to the Birmingham section all day, and the committee recommends that the London section, hitherto open to the public only in the evenings and Saturday afternoon, should in future be open to the public on payment from 2 p.m. each day and all day on both Saturdays. In view of this recommendation, it is suggested that great care should be exercised to exclude the public during hours reserved for trade buyers, for whom special badges should be provided. A new suggestion is that enquiry kiosks should be provided to put members of the public in touch with retail distributors of goods shown at the Fair.

* * *

National Mark Flour.

A revised edition of Marketing Leaflet No. 12, in which are embodied the recent amendments to the National Mark scheme for the grading and marking of all-English wheat flour, has been issued. While no change has been made in the grades and standards of wheat flour, the qualifications for enrolment in the scheme have been modified in the case of packers—*i.e.*, grocers, bakers, etc.—who, instead of being required to have a weekly output of flour of all kinds of not less than 50 cwts, packed and sold as flour, will be eligible for enrolment if their weekly output as above is not less than 10 cwts., or, alternatively, if they can produce evidence that for a period of six months prior to application they have taken not less than one sack (280 lbs.) of National Mark flour weekly. Copies may be obtained, post free, on application to the Secretary, Ministry of Agriculture and Fisheries, 10, Whitehall Place, London, S.W. 1.

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Olive Oil Control.

As a result of the overproduction of olive oil in recent years and of the comparatively small domestic consumption and exports, states the Greek Government, large stocks have accumulated in the market and the olive oil prices are continually dropping. The Government has decided in principle to establish an office for the protection of Greek olives and olive oil, similar to the Greek Central Currants Office. The office contemplated will concentrate and buy all quantities of olive oil offered by domestic producers at prices to be determined on the basis of the oil's acidity, and it will take charge of the marketing.

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Butter Whys and Wherefores.

Where Irish butter is preferred to Colonial, where customers would rather buy their butter in packet than in bulk, and why Danish butter has such a strong following in Northern England are some of the interesting points answered by a survey made by the Empire Marketing Board, and published recently under the title of *The Demand for Empire Butter* (Stationery Office, 1s. net). These and other facts of interest to those engaged in the food trade were obtained by means of personal visits to nearly 3,000 shops in Great Britain. The enquiry was carried out in eighteen large towns, including London, Manchester, Liverpool, Bristol, Cardiff, Birmingham, Sheffield, Bradford, Leeds, Glasgow, Edinburgh, etc., and was estimated to cover a population of twelve millions.

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The Housewife's Choice.—The survey indicates that housewives in different parts of the country prefer different types of butter, even to the extent of paying 2d. or 3d. a lb. extra for their choice. Over three-quarters of the rise in butter imports since 1913 is accounted for by increased imports from the Empire. The outstanding feature of the butter trade during the past few years has been the rapid rise of New Zealand as a source of supply. This Dominion now sends us 20 per cent. of our total imports, whereas, before the war, the proportion was very small. Australia, too, has been steadily gaining ground and now sends us 12 per cent. of our imports. A few years ago South Africa entered the field and shipped about 12,000 cwts. last year. The Irish Free State supplies about 9 per cent. Altogether, oversea Empire countries supply just under half our total requirements of butter. This proportion is steadily rising. If home production is added, Empire and foreign supplies are just about balanced.

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Nation Eating more Butter.—Consumption of butter in the United Kingdom has risen remarkably since 1913. We now absorb no less than 2,250,000 cwts. more every year than we did before the war. Nearly half this increase is accounted for by imports from New Zealand. Last year the United Kingdom imported 6,500,000 cwts. Home production is estimated at about 750,000 cwts. Empire butter has made much more headway in the South than in the North. The North Country housewife often prefers Scandinavian butter because she is accustomed to the cask-shaped blocks, or "kiels," in which it is displayed in the shops. Empire butter, which arrives in boxes, adorns the window in the less-popular shaped square block. Home farm butter, the survey shows, is the most expensive, and is retailed mostly in the country districts.

Financial News

The Editor cannot accept responsibility for any errors which may appear in the Financial News Section

Bank Rate (1929–1930)

1929.		1930.	
Feb. 7	5½ per cent.	Feb. 6	4½ per cent.
Sept. 26	6½ ,, ,,	Mar. 6	4 ,, ,,
Oct. 31	6 ,, ,,	,, 20	3½ ,, ,,
Nov. 21	5½ ,, ,,	May 1	3 ,, ,,
Dec. 12	5 ,, ,,		

A good proportion of the interim dividends recently announced by companies engaged in the food industry are at the same rate as a year ago, although owing to the general depression some concerns have been compelled to reduce the rate, and in certain cases to postpone payment until the accounts covering the entire financial year have been prepared.

The interim dividend of 3¾ per cent. declared by **Benger's Food, Ltd.,** is the same rate as the interim dividend paid in November, 1929. The company's financial year terminates at March 31, and the last accounts revealed a decline in gross profit from £67,380 to £60,043 (including other income), while the net profit amounted to £49,069 as compared with £56,315 in 1928-1929, although it was possible to pay the usual dividend of 10 per cent. The appropriation account was made up as under :

	£	£
Brought forward from 1928-1929 ...	15,358	
Net Profit—year ended March 31, 1930	49,069	
Disposable Balance	£64,427	
6% dividend on £150,000 Cumulative Preference £5 Shares		9,000
10% dividend on £350,000 Ordinary £1 Shares		35,000
Carried forward to 1930-1931		20,427
		£64,427

No transfer was made to reserve, the balance of which remains at £150,000, and the balance sheet showed the following principal items :

	March 31, 1930.
	£
Advertising Reserve	33,233
Goodwill	377,630
Investments	319,925
Stocks	7,338
Debtors	18,248
Cash	15,874
Creditors	18,791
Property and Plant	10,006

During 1929 the ordinary shares reached 38s., the lowest price during the year being 30s., and recently they were quoted at 30s., upon which basis the yield is 6¾ per cent. At 4⅛ the preference shares give a return of nearly 6½ per cent.

As last year, a dividend of 9 per cent. has been paid to the ordinary shareholders of **Cinzano, Ltd.,** a Canadian holding company whose income is derived from investments in several subsidiary and allied manufacturing and distributing undertakings. The accounts covering the 1929-1930 financial year show that, when reduced to the par of exchange, the dividends received total £218,872 as against £221,697, and, after debiting expenses and loss on exchange, amounting to £42,293, the net profit was £176,579. To this sum must be added £5,532 brought in from the previous account, giving a disposable balance of £182,111, of which the dividend on the preference shares absorbs £24,785, and the dividend of 9 per cent. on the ordinary shares £149,723, leaving the sum of £7,603 to be carried forward to the next account. The company was incorporated in 1927 under the laws of the Dominion of Canada.

An interim dividend of 2½ per cent. has again been declared by **Weaver and Co., Ltd.,** the Swansea corn, grain, and seed merchants, etc. This company was registered in 1892, and the authorised capital is £500,000 in £1 shares, comprising £200,000 7 per cent. cumulative preference and £300,000 ordinary shares, of which £60,000 preference and £154,670 ordinary have been issued and paid up. In 1927-1928, and also in 1928-1929, a dividend of 12½ per cent. was paid, but for 1929-1930 the rate was reduced to 10 per cent., the appropriation figures being as follow :

	£	£
Brought forward from 1928-1929 ...	28,251	
Net Profit—year ended March 31, 1930	1,394	
Disposable Balance	£29,645	
7% dividend on £60,000 Cumulative Preference Shares		4,200
10% dividend on £154,670 Ordinary Shares ...		15,467
Carried forward to 1930-1931		9,978
		£29,645

In June, 1929, the shares were subdivided from £10 to £1.

This year an interim dividend of 1¼ per cent. has been paid by **Dublin Granaries Co., Ltd.** The company was registered in 1875, and in 1895 the share capital was reduced from £100,000 to £80,000, and in 1926 to £72,000 in shares of £8 each, of which £32,000 has been issued and paid up. Last year no interim dividend was paid, although the final dividend was at the rate of 2½ per cent. The financial year ends at December 31, and the accounts for the 1929 period showed a profit of £1,071 as compared with £782 for the previous twelve months, to which was added the sum of £3,012 brought in from the 1928 appropriation. The credit balance carried forward to the present year is £2,968.

An interim dividend of 5 per cent., less tax, has been paid by **Smith's Potato Crisps (1929), Ltd.,** manufacturers of potato crisps and packers of dried fruits and nuts, the rate corresponding with that paid a year ago. The first accounts covered the period from February 11, 1929, to March 31, 1930, and disclosed a profit of £91,461, from which was deducted income-tax £19,349, the balance of net profit being, therefore, £72,112. This amount was allocated in the following manner :

	£	£
5% interim dividend on £325,000 Shares of 5s. each, paid in October, 1929 ...	16,250	
Less tax at 4s. in the £	3,250	
		13,000
10% final dividend on £325,000 Shares, making 15% (actual) for 13½ months...	32,500	
Less tax at 4s. 6d. in the £ ...	7,313	
		25,187
Transferred to Reserve Account		15,000
Carried forward to 1930-1931		18,925
		£72,112

The net profit prior to the incorporation of the company amounted to £4,894, and this was utilised in writing down the preliminary expenses by £2,072 and the goodwill by £1,022. The balance sheet at March, 1930, included the following items :

	£
Goodwill	128,072
Stocks	25,516
Debtors	16,215
Cash	13,000
Investments	58,718
Creditors	36,531
Owing to Subsidiary	4,548

At the recent price of 8s. 6d. the shares yield about 7·84 per cent. per annum.,

As last year, an interim dividend of 3 per cent. has been paid by **United Cattle Products, Ltd.**, a company which was registered in 1920 for the purpose of amalgamating eleven undertakings, meat and offal importers and contractors, tripe dressers, and manufacturers of neat's-foot oil and tallow, etc. The last accounts were made up to March 29, 1930, and disclosed a balance of profit amounting to £30,599, which enabled a final dividend of 5 per cent. to be paid, making 8 per cent. for the year, as compared with 7½ per cent. in 1928-1929. After allocating £5,000 to depreciation and £5,000 to reserve, the sum of £21,237 was carried forward as against £20,051 brought in. The company owns or occupies some 166 restaurant and retail establishments, and 13 food factories in Lancashire and the North. The authorised capital is £500,000 in ordinary £1 shares, and £405,000 has been issued and paid up. Unless otherwise provided, all new shares created must be offered first to shareholders *pro rata*.

D. Smith and Sons (1924), Ltd., carton and boxmakers, etc., has paid an interim dividend of 20 per cent., as last year. This company was registered as a private company in 1924, and was converted into a public company at the end of 1928. The entire authorised ordinary capital of £30,000 has been issued and paid up in the form of 1s. shares, and the audited accounts covering the financial year ended January 31 last revealed a profit of £13,089, to which must be added the sum of £896 brought in from the previous accounts, giving a disposable balance of £13,985. This enabled a final dividend of 20 per cent. to be paid, making 40 per cent. for the year. Since the termination of the last accounting period the sum of £20,000 has been capitalised out of reserves, and a bonus of 66⅔ per cent. issued in the form of 100,000 8 per cent. cumulative preference shares of 4s. denomination.

Although the capital of **Unilever, Ltd.**, ranking for dividend is considerably larger than a year ago, an interim dividend of 4 per cent. has again been paid. The former title of the company was **"Margarine Union, Ltd.,"** and, together with **Margarine Unie (Naamlooze Vennootschap)**, the organisation controls the major part of the European margarine industry, and is interested in oil crushing, refining and hardening factories, and allied concerns. During 1929 the issued capital was increased and new businesses acquired, and at December 31, 1929, the capital aggregated £19,623,667. The appropriation figures of the two companies are given below:

UNILEVER, LTD.

	£
Brought forward from 1928	26,887
Net Profit—year ended December 31, 1929	580,382
Disposable Balance	£607,269
	£
Preferred dividends	70,000
Ordinary dividends, 10%	250,000
Allocated to General Reserve	250,000
Carried forward to 1930	37,269
	£607,269

UNILEVER N.V.

	£
Brought forward from 1928 ...	52,413
Net Profit—year ended December 31, 1929	2,044,401
Disposable Balance ...	£2,096,814
	£
Preferred dividends	198,456
Ordinary dividends, 10%	1,328,858
Allocated to Dividend Tax Reserve	62,500
Transferred to General Reserve	1,250,000
Carried forward to 1930	157,000
	£2,096,814

The general reserves of the two companies, together with the sums carried forward, aggregated £9,163,288.

No interim dividend is being paid this year by **L. Rose and Co., Ltd.**, the lime-fruit growers, juice and wine merchants, etc. The company's accounts are made up to December 31 each year, and the profit realised during 1929 amounted to £24,569, to which was added the sum of £3,975 brought in from the previous appropriation, giving a disposable balance of £28,544, which was allocated in the following manner:

	£
Written off capital reorganisation expenses ...	1,344
Income-tax provision	1,470
6% dividend on £75,000 Cumulative Preference £1 Shares	4,500
25% interim dividend on £18,750 Ordinary 2s. Shares, paid in November, 1929	4,687
25% final dividend on £18,750 Ordinary Shares, making 50% for the year	4,688
Transferred to General Reserve	2,299
Carried forward to 1930	9,547
	£28,544

The issued capital amounts to £168,750, comprising £75,000 preference, £75,000 8 per cent. cumulative preferred ordinary, and £18,750 ordinary shares, but the first dividend on the preferred ordinary shares was not due until January 31.

At a special meeting of **D. Smith and Sons (1924), Ltd.**, resolutions to increase the capital of the company from £50,000 to £100,000 by the creation of 250,000 8 per cent. cumulative preference shares of 4s. each, and to alter the articles of association, were passed unanimously. It is proposed to issue 150,000 of the new preference shares which will be offered to present shareholders of both classes.

After fifty-four years with **C. and E. Morton, Ltd.**, Mr. Charles D. Morton has resigned.

Messrs. A. M. Phillips and L. Burns have been appointed directors of **Irving's Sea-Vitoids, Ltd.** The following have resigned from the Board: Sir W. M. C. Beresford Whyte, Right Hon. Lord Teynham, Colonel J. Williams, and Major the Hon. G. French. The petition to wind up the company has been dismissed.

At a recent meeting of **United Caterers, Ltd.**, a committee of investigation was appointed, consisting of Messrs. Frampton Paine, G. W. Blain, and W. H. Walker. Registered in 1927, the company owns flour mills, bakeries, factories, and branches in London and the adjacent districts, and, according to the last report covering the financial year ended June 30 last, satisfactory profits have been realised at the majority of branches, while losses have been sustained elsewhere. The profit on trading amounted to £17,373, but, after debiting expenses, income-tax, and depreciation, the net profit was £274 as compared with a loss of £290 for the previous twelve months. The sum of £126 was brought forward from the last account, and £400 carried forward to 1930-1931. The authorised capital is £350,000, comprising £150,000 in 8 per cent. cumulative preference £1 shares and £200,000 in ordinary 5s. shares, of which £250,000 has been issued and paid up, consisting of all the preference and £100,000 ordinary shares.

A dividend of 5 per cent. has been announced by **Bell Brothers (Manchester, 1927), Ltd.**, on the 10 per cent. cumulative participating preference shares of 15s. for the half-year ended September 30 last.

As last year, **J. Lyons and Co., Ltd.**, has declared an interim dividend of 1s. 8d. per share on the ordinary and "A" ordinary shares, and 4d. per share on the proportional profit and "B" proportional profit shares.

It appears that serious difficulties have arisen regarding the proposed merger into **Allied Stores, Ltd.** While the **Unilever** interests agree that the directors of **Allied Stores** should conduct the new company for the benefit of its shareholders, they are not disposed to permit any one of the constituent companies to dictate the manufacturing policy. Proposals made by the **International Tea Company's Stores** for amending the scheme have been found unacceptable to the directors of **Home and Colonial**, and these negotiations have been abandoned.

Mr. A. Leitch has been appointed a director of **Canadian Canners, Ltd.**, in place of Mr. J. J. Nairn, deceased.

The offices of **Allied Dairies, Ltd.**, are now at 32, Gartside Street, Manchester.

Stock and Share Markets

The opening of the December account revealed few improvements in general market conditions, the majority of price movements being favourable to buyers. H. P. Sauce ordinary shares were marked around 100s. as compared with 96s., and Holbrook's ordinary changed hands 9d. higher at 15s. 6d. Home and Colonial issues show a definite improvement, but Imperial Chemical ordinary and deferred lost a few points. Lipton's ordinary and preference sagged, although the 6 per cent. debentures rose to 99½. Maypole Dairy 20 per cent. preferred increased from 14s. 3d. to 15s. 6d., but the 5 per cent. preference and the deferred were slightly lower. Lovell and Christmas were quoted down to 12s., and Mather and Platt to 37s. Salt Union 4½ per cent. debentures improved to 82½ as compared with 78½ a few weeks ago.

Stock and Share List

	Dec., 1930.	*Par Value*	*Nov., 1930.*
Aerated Bread: Ord. ...	18/6	£1	18/4
6½% Pref.	20/7	£1	19/9
Apollinaris: Ord.	6/-	£1	6/3
Assoc. Biscuit: 6½% Pref. ...	24/3	£1	23/3
Avery (W. and T.): Ord. ...	53/3	£1	53/-
Benger's Food: Ord. ...	30/-	£1	29/3
6% Pref.	4⅞	£5	4⅞
Bovril: Ord.	24/6	£1	24/4
Deferred	37/6	£1	39/-
6% Pref.	23/3	£1	22/6
4½% Deb	80½	£100	80¼
British Aluminium: Ord. ...	33	£1	36
6% Pref.	21/6	£1	22/6
British Thomson Houston:			
7% Pref.	23/11	£1	23/9
Bucknall (H.) and Sons: Ord.	20/-	£5	25/-
Cadbury: 8% 2nd Pref. ...	28/-	£1	27/6
Carrs: 6½% Pref.	20/3	£1	21/6
Cerebos: Ord.	6¼	£1	6 5/16
Chivers: 6% Deb.	102¼	£100	101
Cinzano: 7½% Pref.	20/10	£1	20/9
Clark's Bread: Ord.	22/6	10/-	22/6
Criterion Restaurants: Ord.	7/-	5/-	7/2
Crosse and Blackwell: Ord.	1/11	1/-	2/-
7½% Pref.	11/6	15/-	10/9
6½% Deb.	97½	£100	97
English and Dutch Meat:			
8% Deb.	49	£100	48
English Margarine: Pref. ...	23	£1	22/10
Foster Clark: Ord.	49/-	10/-	50/-
Fry's 8% "B" Preferred ...	22/-	£1	22/-
H.P. Sauce: Ord.	100	£1	96/-
Hill (W.): Ord.	6/-	£1	5/9
Holbrooks: Ord.	15/6	5/-	14/9
5% Pref.	4 1/16	£5	4
Home and Colonial: Ord. ...	14/3	4/-	13/3
15% Cum. Ord.	48/6	£1	43/9
6% Cum. Pref.	5 9/16	£5	5½
Hovis: 6% Cum. Pref. ...	23	£1	23/-
Imperial Chemical: Ord. ...	19/5	£1	20/1
Deferred	5/5	10/-	6/-
7% Cum. Pref.	23/2	£1	22/2
International Tea: Ord. ...	10/4	5/-	10/6
6% 1st Pref.	22/6	£1	21/3
7% "A" Pref.	24/4	£1	24/-
Jurgens:			
7% Cum. Partg. Pref. ...	25	£1	24/9
Liebigs: (Reg.)	14¾	£5	14 5/16
(Bearer)	14½	£5	14 1/16
5% Pref.	99/6	£5	95/8
Lipton: Ord.	4	1	4/8
5% 1st Pref.	7/7	10/-	7/9
6% Pref.	8/1	10/-	8/6
6% Deb.	96½	£100	98
Lovell and Christmas: Ord.	12	£1	13/-
Lyons: Ord.	97/-	£1	96/11
"A" Ord.	96/2	£1	95/8
5% Pref.	20/6	£1	20/3
6% Preferred Ord. ...	22/-	£1	21/9
7% Pref.	27/-	£1	26/8
8% Pref.	29/7	£1	29/3
Mather and Platt: Ord. ...	37/-	£1	40/-
Maypole Dairy:			
20% Preferred	15/6	5/-	14/3
Deferred	4/7	2/-	4/8
5% Pref.	18/11	£1	19/-
Meadow Dairy: 7½% Pref. ...	23/6	£1	23/6
Mellin's Food: 6% Cum. Pref.	2/6	£1	3/9
Molassine: 7% Pref.	10/4	15/-	10/3
Nathan (J.): Ord.	2/-	1/-	2/-
7% Pref.	16/-	£1	16/-
8% Preferred	7/-	10/-	7/-
Nestlés: 8% Pref.	30/-	£1	20/9
Pascall (J.): 8% Preferred ...	8/4	£1	8/3
Peak Frean: 5% Pref. ...	18/2	£1	17/11
8% "A" Pref.	26/6	£1	25/9
Radcliffs Edible: Ord. ...	2/-	1/-	2/-
8% Pref.	8/-	10/-	8/-
Radiation: Ord.	36/3	£1	36/-
6% Pref.	22/6	£1	22/4
Salt Union: Ord.	31/3	£1	32/6
7% Pref.	30/6	£1	31/6
4½% Deb.	82½	£100	78½
Schweppes: Deferred ...	32/9	£1	33/9
4% Deb.	77	£100	75
Scribbans: Ord.	14/4	£1	14/-
Deferred	2/-	1/-	2/-
Smithfield & Argentine Meat:			
7½% Cum. Pref.	15/9	£1	14/9
Smith's Potato Crisps: Ord.	8/6	5/-	8/9
Spiers and Pond: Ord. ...	18/6	10/-	17/6
6½% Pref.	20/6	£1	20/-
5% Deb.	96	£100	95
Spillers: Ord.	22/3	£1	20/7
6% Pref.	19/3	£1	18/-
Deferred	6/9	£1	6/11
Tate and Lyle: Ord. ...	34/3	£1	39/3
6½% Pref.	23/-	£1	24/-
Unilever: Ord.	40/3	£1	45/9
7% Preferred	24/6	£1	24/9
Union Cold Storage: 6% Pref.	21/-	£1	20/3
7% Pref.	22/2	£1	22/3
10% Pref.	27/-	£1	27/-
United Caterers: Ord. ...	7d.	5/-	7½d.
United Dairies: Ord. ...	32/-	£1	32/3
6% Pref.	23/-	£1	21/7
United Glass Bottle: Ord. ...	20/8	£1	20/3
United Molasses: Ord. ...	17/6	£1	20/8

Some Coco-Nut Recipes *(continued from page 20).*

Method.—Place the sugar in the pan with the water. Then set on the steam and take off any scum that has risen. Now add the glucose, stir again until it reaches the boil (place a lid or cover as it is boiling for 2 or 3 minutes and wash down the sides of the pan to remove any unmelted crystals of the sugar). Cook as quickly as possible (actually the time depends very much on the colour you wish to obtain). When the thermometer registers 315° F., turn out on a cold pouring plate. Turn up the edges and knead in the coco-nut and lemon essence, and pass through the tablet rollers. Sift out and set aside, well covered up, to mix with another batch as above, but colour this with carmine, kneading the colour in before adding the coco-nut. When mixed together, pack in airtight glass jars immediately they are cold.

New Companies

YATES AND SONS (SEEDS), LIMITED. (252667.) 432, High Street, Cheltenham. To carry on the bus. of growers and factors of and dlrs. in agricultural and horticultural seeds and produce, etc. Nom. Cap.: £20,000 in £1 shares (10,000 pref. and 10,000 ord.).

BAILEYS (FISH CATERERS), LIMITED. (252525.) 110, High Street, Knaphill, Surrey. To carry on the bus. of fish and genl. caterers, etc. Nom. Cap.: £1,000 in 975 ord. shares of £1 and 500 defd. of 1s.

J. H. ORCHARD, LIMITED. (252510.) 132, Great Portland Street, W. 1. To carry on the bus. of fruiterers, etc. Nom. Cap.: £500 in £1 shares.

BENNETT'S SAFFRON FLOUR, LIMITED. (252404.) To take over the bus. of a saffron flour factor cd. on by W. Bennett at 38, Looe Street, Plymouth. Nom. Cap.: £1,000 in £1 shares.

HASLEMERE DAIRIES, LIMITED. (252018.) To carry on the bus. of cowkeepers, dairymen, etc. Nom. Cap.: £1,000 in £1 shares.

BRILL'S SCOTCH BAKERIES, LIMITED. (251956.) 3, Premier Parade, Edgware. To carry on the bus. of bakers and confectioners as formerly cd. on by J. B. Hayes at Edgware. Nom. Cap.: £10,000 in £1 shares.

JAMES LYLE AND COMPANY, LIMITED. (251913.) 3 and 4, Clement's Inn, W.C. 2. To take over the bus. cd. on by James Lyle and Co., Ltd., and to carry on the bus. of grocers and genl. provision mchts., etc. Nom. Cap.: £4,000 in £1 shares.

SPEEDEEZY COFFEE MAKER, LIMITED. (251951.) Three Queens' Lane, Redcliff Street, Bristol. To mnfre. and deal in coffee filters, percolators, and other coffee machines, etc. Nom. Cap.: £5 in 1s. shares.

FISHERS (COLNE), LIMITED. (251855.) 74, Market Street, Colne. To carry on the bus. of wholesale and/or retail fish and oyster mchts., meat salesmen, etc. Nom. Cap.: £1,500 in £1 shares.

HAWORTH'S DAIRIES, LIMITED. (251834.) 407, Chester Road, Old Trafford, Manchester. To take over the bus. of wholesale and retail dairymen cd. on at Manchester as "Haworth's Dairies." Nom. Cap.: £100 in £1 shares.

WALTERS (SWEETS AND TOBACCO), LIMITED. (251907.) To take over the bus. of a sweets and tobacco retailer cd. on at Stockport, Ches., as "Walters." Nom. Cap.: £500 in £1 shares.

GOLDEN RAY CAKE COMPANY, LIMITED. (251901.) Brantwood Bakery, Brantwood Road, Tottenham, N. 17. To take over the bus. of a wholesale baker and confectioner cd. on by J. H. B. Gibbons, senr., at Kimberley Mews, Kimberley Gardens, Green Lanes, Harringay. Nom. Cap.: £1,000 in £1 shares (200 "A" and 800 "B").

TOLWORTH LODGE DAIRIES, LIMITED. (252104.) Tolworth Lodge Farm, Ewell Road, Tolworth, Surrey. To take over the bus. of a retail dairyman or purveyor of milk, butter, etc., cd. on at Tolworth Lodge, Surbiton. Nom. Cap.: £3,000 in £1 shares.

ILIKEM SPECIALITIES, LIMITED. (251884.) To mnfre. and deal in vinegar, acetic acid, pickles and sauces, etc. Nom. Cap.: £1,000 in £1 shares.

SHAW SCOTT AND COMPANY, LIMITED. (251894.) Winchester House, Old Broad Street, E.C. 2. To carry on the bus. of mchts., agents, importers, exporters, mnfrs., dlrs. in general produce, etc. Nom. Cap.: £100,000 in £1 shares.

VAUX BROTHERS, LIMITED. (252105.) To take over the bus. of grocers, provision mchts., corn mchts., wine and spirit mchts., etc., cd. on at Pontefract and elsewhere in Yorkshire as "Vaux Brothers." Nom. Cap.: £9,360 in £1 shares.

WIMBLEDON AND DISTRICT GROCERS (WHOLESALE), LIMITED. (252107.) 49, Hill Road, Wimbledon, S.W. 19. To promote and facilitate the buying by the members of the Wimbledon and District Grocers' Association, who are shareholders in the company, of goods sold or stocked by grocers or allied trades, etc. Nom. Cap.: £100 in 5s. shares. Dirs.: G. W. Avis, 30, Denmark Road, Wimbledon; F. G. Butler, 4, Victoria Crescent, Wimbledon; T. C. Dyke, 17, Hill Road, Wimbledon; A. F. Hookham, 25, Hartfield Road, Wimbledon; H. J. Millgate, 40, Coombe Lane, Raynes Park, S.W. 20; A. B. Tilley, High Elms, Leatherhead.

J. H. THELWELL AND SONS, LIMITED. (252031.) 16, John Dalton Street, Manchester. To take over the bus. of a fruit and vegetable salesman, etc., cd. on by Sarah R. Thelwell at Smithfield Market, Manchester. Nom. Cap.: £2,000 in £1 shares.

METALS AND MILL FURNISHINGS, LIMITED. (252020.) To carry on the bus. of colliery and mill furnishers, etc. Nom. Cap.: £100 in £1 shares.

SPANISH FRUIT IMPORTERS, LIMITED. (252079.) 57, London Fruit Exchange, Spitalfields, E. 1. To carry on the bus. of fruit and produce and genl. brokers and mchts., etc. Nom. Cap.: £2,000 in £1 shares.

A. B. CRUDGINGTON, LIMITED. (252007.) To take over the bus. of a fish dlr. and poulterer cd. on by A. B. Crudgington at Wallingford, Berks. Nom. Cap.: £1,000 in sixteen pref. shares of £50 and 200 ord. of £1.

FREE AND COMPANY, LIMITED. (252296.) 14, St. Mary Axe, E.C. To carry on the bus. of dairymen, etc. Nom. Cap.: £1,500 in £1 shares.

RICHARD THOMPSON (NEWCASTLE-UPON-TYNE), LIMITED. (252289.) To take over the bus. of a provision importer and mcht. formerly cd. on at White Hart Yard, Cloth Market, Newcastle-upon-Tyne, as "Richard Thompson." Nom. Cap.: £3,000 in £1 shares.

WALTER HOLLAND AND SONS, LIMITED. (252269.) To take over the bus. of bakers, confectioners, and butchers cd. on by W., H. E., F., and W. H. Holland at John Street, Haslingden, Lancs. Nom. Cap.: £5,000 in £1 shares.

JOSEPH LYONS (COVENT GARDEN), LIMITED. (252182.) 25, Endell Street, Covent Garden, W.C. 1. To take over the bus. cd. on at Covent Garden Market, W.C., by John Lyons, and to carry on the bus. of wholesale and retail fruit and vegetable salesmen, etc. Nom. Cap.: £500 in £1 shares. Permt. dirs.: J. Lyons, 181, Wymering Mansions, Maida Vale, W. 9.; M. L. Hull, 1, Gordon Mansions, Francis Street, W.C. 1 (chairman).

WOODLEY AND WHITE, LIMITED. (252194.) 345, The Central Markets, West Smithfield, E.C. To carry on the bus. of importers, exporters, refrigerators, shipowners, and bldrs., ship and insurance brokers, etc. Nom. Cap.: £5,000 in £1 shares.

HENDERSON'S TRAWLING COMPANY, LIMITED. (252177.) The Balcony, North Side, St. Andrew's Dock, Hull. To acquire and manage steam fishing vessels, etc. Nom. Cap.: £10,000 in £1 shares.

PROVINCIAL FRUIT AND FLOWER GROWERS' ASSOCIATION, LIMITED. (252218.) To acquire the benefit of the goodwill of the bus. of fruit, fish, and game dlr. cd. on by R. B. Thompson at 26a, East Parade, Harrogate, and elsewhere. Nom. Cap.: £3,000 in £1 shares (1,500 pref. and 1,500 ord.).

ALEXANDRA SEPARATOR COMPANY, LIMITED. (252009.) 21, Pancras Road, N.W. 1. To carry on the bus. of mnfrs., importers and exporters of machinery and all appliances and accessories, etc. Nom. Cap.: £500 in £1 shares. Dirs.: P. Hannover, 32, Tagensvey, Copenhagen, Denmark; H. V. Hunt, Baxter Lodge, Clissold Park, N. 16; R. N. Selby, Woolborough Cottage, Outwood, Surrey. Qual. of dirs.: One share.

DURALTA, LIMITED. (252158.) To carry on the bus. of agents and dlrs. in merchandise of all kinds, including provisions, foodstuffs, household products, etc. Nom. Cap.: £500 in £1 shares.

Current Literature

Fruit and Vegetable Products

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2. Composition of Grape and Grape Products. P. H. Richert. (*Ibid.*, p. 76.)
3. Gum Thickeners and Emulsifiers. H. Bennet. (*Ibid.*, p. 80.)
4. Discoloration of Canned Green Asparagus. H. Wiegand and D. E. Bullis. (*Canner*, 1930, November, p. 11.)
5. Packing Mushrooms in Glass. C. G. Hicks. (*Glass Container*, 1930, November, p. 8.)
6. Avoiding Crop Troubles. C. T. Gregory. (*Canner*, 1930, November, p. 13.)
7. Handling Tomatoes at Fifteen Tons Per Hour. C. A. Miles. (*Canning Age*, 1930, December, p. 785.)
8. Grape-fruit in Glass. M. H. Raney. (*Ibid.*, p. 793.)
9. Tomato Juice Pack Keeps Growing. Dr. A. H. Warth. (*Ibid.*, p. 801.)
10. Large-scale Experiments in Sulphuring Apricots. E. M. Chace, C. G. Church, and D. G. Sorber. (*Ind. and Eng. Chem.*, 1930, December, p. 1317.)

Cereal Products

11. Insulating Board from Cornstalks. C. E. Hartford. (*Ind. and Eng. Chem.*, 1930, p. 1280.)
12. Modern Methods of Making Macaroni. S. E. Mountain. (*Food Industries*, 1930, December, p. 532.)
13. Destruction of Grain Pests. L. Duval. (*Ibid.*, p. 541.)

Dairy Products

14. Better Milk and Better Business. Dr. A. Tobey. (*Glass Container*, 1930, November, p. 10.)
15. Developments in Egg Storage. (*Ice and Cold Storage*, 1930, December, p. 310.)
16. Conveyers in the Handling of Dairy Produce. J. M. Swanson. (*Food Industries*, 1930, December, p. 554.)

Analysis

17. Detection of Heated Milk. S. Rochenfusser. (*Z. Unters. Lebensm.*, 1930, 60, p. 94.)
18. Extractives in Coffee: Ciupka. (*Chem. Ztg.*, 1930, 54, p. 803.)
19. Determination of Maltol in Malt Coffee. T. Merl. (*Z. Unters. Lebensm.*, 1930, 60, p. 216.)
20. Component Glycerides of Stillingia Tallow. T. P. Hilditch and J. Priestman. (*Journ. Soc. Chem. Ind.*, 1930, 49, p. 397.)
21. *Vateria Indica* (Kernels and Oil.) (*Bull. Imp. Inst.*, 1930, 28, p. 279.)
22. American Cherry Kernel Oil. G. S. Jamieson and S. V. Gertler. (*Oil and Fat. Ind.*, 1930, 7, p. 371.)
23. *Moringa aptera* (Seed and Oil.) (*Bull. Imp. Inst.*, 1930, 28, p. 276.)
24. Brazil Nut Oil. H. A. Schuette, R. W. Thomas, and M. Duthey. (*J. Amer. Chem. Soc.*, 1930, 52, p. 4114.)
25. New Reactions of Diallylmalonylurea. F. Lagarce. (*J. Pharm. Chim.*, 1930, 122, p. 364.)
26. New Colour Reaction of Ephedrine. J. Siradgian. (*J. Pharm. Chim.*, 1930, 122, p. 266.)
27. Diastatic Powers of Malt and Malt Extract. C. T. Bennet and F. C. L. Bateman. (*Quart. J. Pharm. and Pharmacog.*, 1930, 3, p. 349.)
28. Determination of Peptic Activity. A. Gilman and G. R. Cowgill. (*J. Biol. Chem.*, 1930, 88, p. 743.)
29. Determination of Starch. L. Paloheimo. (*Biochem. Zeits.*, 1930, 222, p. 150.)

Various

30. Colour Control in the Candy Factory. J. Ambler and J. Hamilton. (*Manuf. Conf.*, 1930, November, p. 40.)
31. Candy Merchandising. Dr. Russell Doubman. (*Ibid.*, p. 43.)
32. Wonders of Colloid Chemistry. (*Ibid.*, p. 45.)
33. Canadian Discoveries in Fish Refrigeration. (*Ice and Cold Storage*, 1930, December, p. 313.)
34. Volumetric Determination of Reducing Sugar. A. R. Ling and W. A. Carter. (*Analyst*, 1930, December, p. 730.)
35. Investigation of Rye Oil. J. W. Croxford. (*Ibid.*, p. 735.)
36. Anti-Scorbutic Vitamin in Apples. M. F. Bracewell, E. Hoyle, and S. S. Zilva. (*Med. Res. Coun., H.M.S.O.* 1930.)
37. Purification and Clarification of Cane and Beet Sugar Juices. G. Mezzadroli and E. Vareton. (*Ind. Sacc. Ital.*, 1928, 11, p. 9.)
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40. Vitamins A and D in Fish Oils. (*Ibid.*, p. 1361.)
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43. Continuous Roasting of Cacao. G. Defren. (*Ibid.*, p. 548.)

Recent Trade Marks

This list of Trade Marks of interest to readers has been selected from the "Official Trade Marks Journal," and is published by permission of the Controller of H.M. Stationery Office.

AIRWAY.—516,048. **Cream of tartar substitutes (for food) and egg products (for food).** J. AND G. HARDIE AND CO., LTD., 178, Fulton Street, Anniesland, Glasgow. December 3. (Associated.)

BRITEWAY.—515,623. **Canned fruits, canned vegetables, and dried fruits.** HARTER PACKING CO., near the city of Yuba (P.O. Box 457, Yuba), State of California, United States of America. December 3.

KING ALBERT.—513,031. **Cocoa, chocolate, confectionery, and biscuits.** ROWNTREE AND CO., LTD., The Cocoa Works, Wigginton Road, York. November 26.

GOLDENOL.—515,704. **Sugar.** WAITROSE, LTD., 21 and 23, Gloucester Road, South Kensington, London, S.W. 7. November 26.

EMULTEX.—515,817. **Milk powder (for food), edible oils, and edible fats.** TRUFOOD, LTD., Union House, St. Martin's-le-Grand, London, E.C. 1. November 19. (By consent.)

LEEDEEN.—516,026. **Tinned fish.** THE ANGLO-NORWEGIAN SARDINE CO., LTD., Clarence Chambers, 39, Corporation Street, Birmingham. November 19.

CHEF.—513,587. **Peas for use as food.** "CHEF" PEAS, LTD., Phœnix Granary, 58, Diamond Street, Bradford, Yorkshire. November 19. (Associated.)

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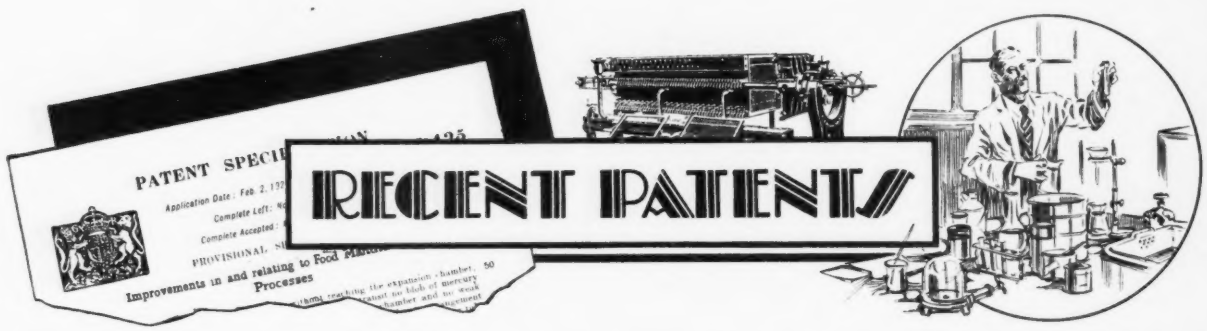

These particulars of New Patents of interest to readers have been selected from the Official Journal of Patents, and are published by permission of the Controller of H.M. Stationery Office.

Latest Patent Applications

35642. BAKER PERKINS, LTD., and PRESCOTT, W. E., and TARONI, C. E.: Confectionery depositing machines. November 26.

35661. POLLITT, W. T.: Appliances for icing confectionery. November 27.

34946. VUK, M.: Increasing baking capacity of cereal meal production. November 20.

33845. BAKER PERKINS, LTD., and HARBER, L. S., and POINTON, J. E.: Dough-moulding, etc., machines. November 10.

33842. HALL, P.: Treatment of foodstuffs for transport, etc. November 10.

Specifications Published

338,706. VICARS, LTD., T. AND T., and CROSLAND, E. M.: Machinery for the handling of biscuits and the like articles.

337,875. CHEETHAM, J. W., CHEETHAM, H. W., and CHEETHAM, T. H.: Mechanism or apparatus for moulding dough.

337,930. GILL, H. A. (STANDARD BRANDS, INC.): Process for the manufacture of leavened bread.

Printed copies of the full Published Specifications may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C. 2., at the uniform price of 1s. each.

Abstracts Published

336,321. **Jams, etc.; confectionery.** BEACH, A. W., 102, Church Road, Richmond, Surrey.

In the manufacture of jams, marmalade conserves, confectionery, etc., the sugar is added in the form of an aqueous solution, containing, preferably, 40 per cent. or more of sugar, obtained by lixiviation or diffusion treatment of sugar beet. The sugar solution may be obtained by diffusion treatment of dried cossettes of beet, the solution being concentrated until its sugar content is about 40 per cent., clarified—*e.g.*, by filtration—and subjected to a lime or other treatment to remove albumenoids, the purification being effected so as completely to clarify and decolorise the solution and remove suspended impurities. Reference has been directed by the Comptroller to Specifications 136,205, 147,838, and 148,407.

336,632. **Cooling fish, meat, etc.** GENERAL FOODS, CO., 41, Commercial Street, Gloucester, Massachusetts, U.S.A.—(Assignees of Birdseye, C.; 1, Beach Road, Gloucester, Massachusetts, U.S.A.) April 16, 1929, No. 15610/30. Convention date, February 6, 1929. Divided on 336,637. [Classes 29 and 78 (i).]

336,605. **Fruit-picking bag.** SIBETH, E. F., Manuka, Payhembury, Honiton, Devon. June 13, 1929, No. 18137. [Classes 133 and 141.]

336,751. **Stacking biscuits, etc.** BOER, H. P. DEN, 42, Toulonschestraat, Dordrecht, Holland. September 19, 1929, No. 28487. Convention date, August 6. [Class 94 (i).]

336,619. **Drying tea.** MAIN, J. A., Clydesdale Ironworks, Possilpark, Glasgow. June 14, 1929, Nos. 18353/29, 34020/29, and 6940/30. [Class 34 (ii).]

336,847. **Slicing bread.** MAC-ROH SALES AND MANUFACTURING CO., 312, Kahl Building, Davenport, Iowa, U.S.A.—(Assignees of Rohwedder, O. F.; 723, Brown Street, Davenport, Iowa, U.S.A.) November 22, 1929, No. 35829. Convention date, November 26, 1928. [Classes 5 (i) and 78 (i).]

336,837. **Kneading butter, etc.** NAAMLOOZE VENNOOTSCHAP GRASSO'S MACHINEFABRIEKEN and GRASSO, H. A. M., Hertogenbosch, Holland. November 13, 1929, No. 34645. [A specification was laid open to inspection under Sect. 91 of the Acts, November 16, 1929.] [Classes 84 and 86.]

332,041. **Slicing butter, etc.** EWART, R. D., 45, Dick Place, Edinburgh. June 27, 1929, No. 19735. [Class 87 (ii).]

332,047. **Dried milk preparations.** GATES, W. R. B. ST. J., TAVROGES, J., and COW AND GATE, LTD., Stoke Road, Guildford, Surrey. July 3, 1929, No. 20435. [Classes 49 and 129.]

A dried milk product having laxative properties is obtained by distributing phenolphthalein in finely dispersed state through milk, or a mixture of milk with coffee, cocoa, etc., and then drying. The phenolphthalein may be dissolved in an alkaline solution—*e.g.*, aqueous sodium carbonate—and the solution added to the milk, which is stirred well so that a homogeneous mixture is obtained, the phenolphthalein being precipitated in finely dispersed condition by the acids present in the milk, the product being finally dried. In an example, 20 gm. of phenolphthalein are added to a small quantity of water in which 30 gm. of sodium carbonate have been dissolved and the solution is then added to 10 gallons of milk.

London Gazette Information

MERCHANDISE MARKS ACT, 1926.

His Majesty in Council was pleased on October 27, 1930, to approve three Orders in Council under the above-named Act, entitled:

Merchandise Marks (Imported Goods) No. 7 Order, 1930.
" " " " No. 8 " "
" " " " No. 9 " "

Copies of the Orders, when published, may be purchased directly from H.M. Stationery Offices.

MARKING OF IMPORTED BUTTER.

It has been found necessary to cancel the arrangement whereby the Public Enquiry into the application for an Order in Council under the Merchandise Marks Act, 1926, in respect of imported butter was to have been resumed on November 10, 1930. No date has yet been fixed for the continuation of this Enquiry, but a further notice regarding the matter will be issued.